

Project Based Economics



Project Based Economics

Buck Institute for Education
Buck Institute for Education (BIE)

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CHAPTER

1

Project Based Economics

CHAPTER OUTLINE

- 1.1 FOREWORD**
 - 1.2 WHAT IS PROJECT BASED LEARNING?**
 - 1.3 HOW DO WE APPLY PROJECT BASED LEARNING TO ECONOMICS?**
 - 1.4 ESSENTIAL PBE CURRICULUM UNITS: SCENARIOS AND ECONOMIC CONCEPTS TAUGHT**
 - 1.5 TEACHING IN A PBL ENVIRONMENT**
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1.1 Foreword

Students learn more when they care about what they are learning. Students understand concepts better if they see how these concepts apply to the world outside of school. Students retain information longer if they are actively engaged in discussion and demonstration of what they are learning.

These are hardly new ideas, but too much of what happens in American classrooms does not meet this ideal. *Project Based Economics* (PBE) is built upon these principles. It addresses the concepts and content defined by the *Voluntary National Content Standards in Economics*, but does it in such a way that this material becomes meaningful and involving to students. PBE reverses the traditional method of “teach the concepts first then give students the opportunity to apply them.” Instead, PBE places students in an interesting scenario with an open-ended problem to solve and asks them to arrive at a justifiable solution using economic concepts. The project thus “pulls” students through the content. The teacher’s role is to clarify, facilitate and guide, rather than “push” unmotivated students toward the learning objectives.

Additionally, the PBE methodology helps teachers build valuable interdisciplinary “21st century skills” including collaboration, critical thinking/problem solving, and making a presentation. We have found that PBE works well for diverse students in a variety of school settings.

These units were developed collaboratively by the Buck Institute for Education and the HIRE Center, California State University, East Bay. They have been pilot-tested and critiqued by a group of energetic and insightful teachers throughout California. Although too many teachers have been involved in the development of these units to thank each teacher by name, we are extremely grateful for their time, insight and contributions to making these units successful. In addition, there have been a number of university professors, staff developers, and school district staff that have contributed to unit development. We have benefited from their observations and suggestions, and offer a collective “Thank You!”

Please consult the BIE website (<http://www.bie.org>) for additional resources on Project Based Learning and to find out about BIE professional development offerings and conference presentations.

Nan L. Maxwell, PhD *Executive Director, HIRE Center, California State University, East Bay*

John Mergendoller, PhD *Executive Director, Buck Institute for Education*

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1.2 What is Project Based Learning?

Project Based Learning (PBL) is an instructional method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, presentation, and critical thinking/problem solving
- Create high-quality products and performances which are presented to a public audience

In *Project Based Economics*, each project is a complete unit of instruction centered around an engaging scenario that presents students with a problem that does not have a single “right answer.” In order to resolve the problem successfully, students realize they need to understand economics, so they are more motivated to learn the curriculum.

Although structured flexibly enough to allow for student discovery and independent learning, all PBE projects follow a series of steps or phases. These phases may sometimes overlap but can generally be defined as follows:

Project Launch – the “Entry Event”

Students either receive some type of authentic correspondence or have an authentic experience intended to engage them in the project scenario and launch the inquiry process.

Framing the Inquiry – the Driving Question and Knowledge Inventory

To begin the inquiry and problem-solving process, students as a class analyze their task and write a “Driving Question” that guides the project. The teacher coaches students in the construction of a Driving Question that summarizes the problem to be resolved, which in PBE is written according to the model:

“How can we, as _____?, (do) _____?, so that _____?”

The teacher also leads the class through a discussion and recording of knowledge that the students already have (know) and information that they still require (need to know) in order to arrive at a solution to the problem. This process is repeated periodically throughout the lesson.

Scenario Development and Learning Activities

The project’s scenario unfolds as students receive additional information about the problem to be solved. Students work in teams to conduct independent investigation and complete project tasks, while the teacher provides resources and lessons, guided by the students’ “need to know” list. A Project Log is used to check for student understanding of key economic terms and concepts. The class revises the knowledge inventory periodically, and revisits the Driving Question to help stay on track toward a reasonable resolution to the scenario. The teacher monitors students’ progress and watches for “teachable moments” when students recognize their need to know more about economics.

Presentation, Assessment, and Debrief

The project culminates as students finalize their solution to the problem posed in the scenario. Students prepare authentic products and present them to an audience and/or publicly discuss each group’s work. The teacher uses a

rubric to evaluate the students' work, and may also choose to administer a test to assess learning. The last step is to debrief the project with students, discussing both economics content and the process by which it was learned.

1.3 How Do We Apply Project Based Learning to Economics?

First, what is economics? It is the study of the allocation of scarce resources. Because resources are scarce, individuals, firms, and society must make choices about how to allocate resources. That is, when deciding how to spend a fixed amount of money and without having enough money to buy all of the goods desired, it is possible to get more of one good only by giving up another good. This is also true for firms and society. For example, in order to hire more labor, firms must reduce capital. For government, unless public debt is increased, expenditures in one area must be reduced in order to increase spending on, for example, defense, welfare, education, or other areas.

To help students gain a better understanding of how our economy allocates scarce resources, the Buck Institute for Education has focused all of its project based learning curriculum units around teaching different aspects of **scarcity** and the related concepts of **opportunity costs** and **tradeoffs**. By integrating each of these PBL units into a high school economics course, students will have a better understanding of how the allocation of scarce resources forces individuals, firms, and society to make choices among competing goods and why those choices determine how resources are used. In other words, taken together, the units demonstrate how our economy responds to each of the four basic economic questions:

- What is produced and in what quantities?
- How are goods produced?
- For whom are goods produced?
- Who makes economic decisions and by what process?

1.4 Essential PBE Curriculum Units: Scenarios and Economic Concepts Taught

Five units make up the essential PBE curriculum, allowing teachers to teach most of the National High School Standards for micro- and macro-economics:

- **Running in Place**

Scenario: A rookie entrepreneur who wants to start a new shoe company asks his daughter and her friends, who are graduate students in economics, to advise him on how his venture might fit into a market economy. He asks them to explain the factors of production and the relationship between consumers and producers, and to outline his options for deciding how to set up production and for whom to produce.

Economic Concepts Taught: Market; market economy; entrepreneur; factor and product markets; factors of production; scarcity, tradeoffs, and opportunity cost.

- **The Invisible Hand**

Scenario: The U.S. Department of Energy Secretary asks his policy group for help in planning how to implement legislation on gasoline price controls that was passed by Congress. As they explain to their boss how price controls affect a free market, the policy group must balance the needs of various groups of consumers in U.S. society with the need to provide incentives to suppliers.

Economic Concepts Taught: Demand and supply; equilibrium price and quantity; market economy; black market; price ceiling and price control; shortage; scarcity and tradeoff.

- **Monopoly's Might**

Scenario: High school student entrepreneurs in a School-Based Enterprise (SBE) have developed, produced, and marketed a low-calorie avocado. During the course of the next three years, the SBE team analyzes data on sales, revenue, costs and profits to help them convince a venture capitalist to invest, then to fund research and development for a much-needed pesticide. After becoming a monopoly with a patent for the pesticide, the SBE is bought out by a large corporation, which leads to a debate about the pros and cons of competition and monopolies in a free market economy.

Economic Concepts Taught: Competition; corporation; demand; market economy; monopoly; barrier to entry; patent; profit; supply; scarcity, tradeoff, and opportunity cost.

- **The Greater Good (formerly The Great Awakening)**

Scenario: Teams of economic leaders from two island nations pursue the possibility of trade by analyzing data on the hours it takes to produce goods, and discover economic benefits that occur with specialization of production and trade. After a trade agreement is negotiated, protests arise due to fear of lost jobs and environmental damage, and the leaders of the islands must justify their agreement.

Economic Concepts Taught: Absolute and comparative advantage; export and import; free trade; protectionism; specialization; scarcity, tradeoff, and opportunity cost.

- **The President's Dilemma**

Scenario: During an economic crisis involving oil price shocks, inflation, and unemployment, the President of the U.S. asks his economic advisors for a recommendation on fiscal and monetary policy. Interest groups weigh in—unemployed middle-class workers, retired people, and big-business representatives—as the advisors consider both supply-side and demand-side options and the costs and benefits of various solutions.

Economic Concepts Taught: budget deficit; consumer price index; contractionary policy; demand-side theories; economic indicators; expansionary policy; Federal Reserve System; fiscal policy; government spending; gross domestic product (GDP); inflation; interest rates; monetary policy; multiplier; national debt; supply-side theories; tax; tradeoffs; unemployment rate

Two additional PBE units may be used in various ways:

- **The High School Food Court**

Scenario: The student council at a high school is asked by the principal to make a recommendation to the school board about which restaurants should be chosen for the new food court on campus. The students analyze data on which restaurants would bring in the most revenue, given demand for their products, but must balance this with meeting the needs of various groups within the student body.

Economic Concepts Taught: costs (of production); fixed and variable costs; demand; profit; revenue; scarcity, tradeoff, and opportunity cost

Possible Uses: This relatively short, simple unit may be used to introduce students to Project Based Learning as an instructional method. It introduces the economic concept of demand. Because much of the unit focuses on costs, revenue, and profit, it also can be used in Business Economics courses.

- **Matildaville**

Scenario: The city of Matildaville has been given some undeveloped land by a wealthy benefactor. Economic policy analysts are asked to recommend the best use of the land, considering the wishes of the benefactor and the needs of the community. As the analysts debate a list of possible entities that could operate on the land, a sudden financial crisis forces students to focus their criteria for selection more narrowly around short-term economic concerns.

Economic Concepts Taught: productivity; public debt; resources; economic growth; income; interest rates; investment (public and private); multiplier effect; scarcity, tradeoff, opportunity cost

Possible Uses: Since this unit focuses on topics that are not typically covered in a high school course oriented toward microeconomics, it can be used in an interdisciplinary course on Economics and U.S. Government. This unit is especially useful as a springboard for studying issues of local land use and economic development in students' own communities.

What is Provided in Each Unit

The following are included in each PBE unit:

- A **Unit Overview**, including the time required, a summary of the problem to be resolved in a scenario, the economic concepts to be learned, the placement in the curriculum of a typical high school economics course, and the NCEE Content Standards addressed.
- A section on **how to teach each unit**, which contains:
 - **Sequence of the Unit**, a quickly-referenced list of each step
 - **Step-by-Step Teaching Guide**, with detailed instructions about how to manage each step, plus sample Driving Questions and “Know/Need to Know” lists, Economics Content Notes, prompts for Project Log entries, and “Potential Hurdle” notes
- A section with all **student handout masters**

- A section of **Teacher Materials** with a detailed review of the economic concepts and terminology within the unit, which may be used to guide the preparation of lessons for students, plus a glossary of concept definitions, answer keys for unit assignments, and rubrics for major unit products
- A **multiple-choice test** with an answer key

1.5 Teaching in a PBL Environment

The teacher's job is somewhat different in a classroom involved in PBL. Although traditional tools such as lectures, homework, and quizzes still have a place, they are used in the meaningful context of solving a problem. The role of the teacher using PBL is one of making learning "inevitable" by carefully managing the learning process and promoting a spirit of inquiry. This begins by engaging students in the problem to be solved. As you launch the unit, it is important not to reveal too much about the problem that students are about to encounter, and not to pre-teach the content and take away the motivation to learn that comes after students are "hooked" by the Entry Document. Take the problem seriously. While acknowledging that it is a scenario, point out that the problem is closely modeled on what happens in the real world. Heighten student interest and motivation by emphasizing the important effects their decisions will have – the "so that" part of the Problem Statement written by the class. Model genuine interest and enthusiasm for the challenge of exploring several possible solutions.

The "teacher as coach" metaphor applies as students go about the tasks of conducting research, understanding the problem's complexities, and preparing to present their solutions. Like a good coach watching athletes practice, the teacher needs to observe, diagnose, and guide without doing the work for them. Anticipate some needs before they arise, be prepared to meet them, and watch for new needs as they emerge – but wait until they emerge! One of the biggest challenges for many teachers is to step back and wait for the "need to know" to arise in students. Instead of answering all questions right away, ask, "How could you find that out?" and offer suggestions and resources for further inquiry. If students get stuck at a certain point, act as a "cognitive coach" by modeling thinking strategies. Offer process-oriented comments such as, "How would I approach that issue/task? Well, I might break it down into steps, or I might want to talk with my group about _____, or make sure I understood _____. Or maybe I'd go back to my Need to Know list. . ."

Establishing the classroom culture is also important. Students must know that it is all right to take intellectual risks, and offer creative solutions for critique by their classmates and teacher without fear of ridicule. A healthy spirit of give-and-take needs to be in evidence in a PBL classroom, as does the habit of reflection. Students and the teacher need to constantly ask, "What are we learning?", "How are we learning?", and "What does it mean?" Another vital part of classroom culture is collaboration. Students work in small groups in PBG, and key to their success is the ability to work together comfortably and productively. If students are not used to group work, these skills must be taught. If students are not working well together, the teacher needs to know how to intervene and smooth things out. And when students share ideas, ask questions, and present their work, whether it is to their own classmates or a public audience, a serious and respectful tone should be the norm.

A teacher using PBL should be skilled in planning and organization. Before beginning a PBG unit, make sure to read all instructions and prepare materials carefully. But, do not overplan and feel bound by a predetermined timetable, since it is hard to predict exactly how each class will approach a problem and what needs will arise. A certain amount of flexibility is required, as is the willingness to let go of some expectations and control. Students may propose solutions that you had not considered, or they may want to explore issues in greater depth and breadth. A teacher also needs skill in the use of performance-based assessment. This means knowing how to assess skills like collaboration, communication, and time and task management. You can enhance student development of these skills by providing exemplars, well-written rubrics, and chances to practice with helpful feedback. Sample rubrics for assessing skills such as oral presentations may be found at www.bie.org under *Problem Based Government Unit Resources* and in the *BIE Project Based Learning Handbook*.

Finally, teaching in a PBL environment differs from many traditional classrooms in two other ways. First, it can be noisy – so a teacher (and his or her neighbors and administrators!) must be willing to accept occasional apparent disorder as being the inquiry process at work. Second, a teacher must be willing to personally engage with students in ways other than standing in front of the room delivering content knowledge as the "sage on the stage." A degree

of intellectual and sometimes emotional connection with individual students is often needed to meet the challenges of PBL.

1.6 Preparing Students for PBL

Before starting the first PBE unit, BIE recommends introducing students to the concept of problem based learning itself. This can be accomplished with a 45-minute activity, “*Make More Money?*” In this activity, students encounter an economics-related problem-solving situation that illustrates how PBL works, including how to analyze an Entry Document, write a Driving Question, conduct a Knowledge Inventory – and how to think and act in different ways than they might be used to in typical forms of learning.

1.7 About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

John R. Mergendoller, Ph.D. Executive Director

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CHAPTER **2**

Make More Money

CHAPTER OUTLINE

2.1 MAKE MORE MONEY?



2.1 Make More Money?

An Activity to Introduce Students to the Project Based Learning Methodology and the Buck Institute for Education’s *Project Based Economics Units*

Overview

In this activity, students are presented with a problem-solving task focused on a fictitious high school senior who wants to drop some classes in order to work more hours. In the role of a counseling team at the school, students investigate the facts of the situation, consider the personal and economic choices involved, and recommend a reasonable solution.

Although this activity touches on some basic economic concepts, it is primarily designed for another purpose — to demonstrate the instructional methodology of Project Based Learning (PBL). It may be used with two groups of participants: high school students in the classroom, or their teachers in professional development workshops. The Buck Institute for Education (BIE) has fieldtested this activity successfully with both groups. With students, we recommend using it prior to teaching the first unit from BIE’s *Project Based Economics* materials. The instructions below are written with this use in mind. (If the activity is being used with an audience of teachers, they should experience it much like students will, which is the best way to learn how to implement it.)

Project Based Learning may be an unfamiliar process for many students and teachers. In this activity, which requires less than a typical class period to complete, students will become familiar with many of the key elements of the methodology as designed by BIE for its economics units. Like the *PBE* units, the “Make More Money” activity begins with a problem-solving scenario (not all projects in PBL begin this way, but it is an effective option). PBL is an inquiry-based process that springs from what students identify they need to know in order to solve the problem presented in the scenario. Accordingly, it is important not to “frontload” any information before starting the activity. Do not conduct a discussion, assign reading, or give a lecture in advance about the value of going to college vs. going to work, nor tell students all about PBL. It is sufficient to simply say, “Now we’re going to do an activity that will introduce you to one of the ways we’re going to learn about economics in this course.” The first thing students should see is the “Entry Document”, the note that launches the scenario. After the scenario has run its course, the debriefing time is when the principles and features of PBL should be discussed, along with any content-related issues or further work on the topic that the teacher would like to do.

Project Based Learning has proven effective in teaching content knowledge as well or better than a traditional lecture/textbook approach, improves retention of knowledge, and contributes to the acquisition of 21st century skills such as collaboration, presentation, and critical thinking. Moreover, it increases student engagement and interest in the subject of economics, which is important in their lives as workers and citizens. For BIE’s *Project Based Government* materials and further information about PBL, including BIE’s research, products, and professional development services, visit www.bie.org.

Content Standards Addressed

Voluntary National Standards in Economics:

Standard 1: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

Content keywords: scarcity, trade-offs, opportunity cost

Materials Needed

- **One copy for each student or pair of students of the Entry Document, the note from a student, “AJ” with the additional context for it**
- **To have on hand in case students request it: copies or a displayed version of the handout, “Earnings by Education Level”**
- **Chart paper, whiteboard/chalkboard, overhead transparency, or computer and LCD projector**

Procedure (40 – 50 minutes)

1. **Read the Entry Document aloud as a whole class** (note from “AJ” with added context)
2. **Write an initial “Driving Question” as a whole class** (recorded on a projector, chart paper or board)

Sample:

How can we, as the counseling team, find out what’s going on with AJ, so we can help him/her make a good decision?

3. **Write a list of “What Do We Know?” as a whole class** (recorded on a projector, chart paper or board)

Sample:

- We’re a high school teacher who got a note from a student
- It is September
- AJ is an 18 year old high school senior
- AJ wants to drop classes
- AJ isn’t sure about going to college right away
- AJ has seemed withdrawn and distracted lately
- AJ’s grades have slipped
- We are on AJ’s counseling team
- AJ won’t graduate on time if he/she drops classes
- AJ wants to work more and make more money
- AJ doesn’t want his/her parents involved

4. **Write a list of “What Do We Need to Know?” as a whole class** (recorded on a projector, chart paper or board)

Sample:

- Is AJ male or female?
- What classes does AJ want to drop?
- Why has AJ been distracted and withdrawn?
- What college was AJ planning to go to?
- Why doesn’t AJ want his/her parents involved?
- Do AJ’s parents agree with this decision?
- What job does AJ have?
- How much money does AJ make?
- What does AJ need more money for? Is it urgent right now?
- Has AJ thought through the consequences of not going to college?
- How much more money could AJ make in the long run by going to college?

5. **Discuss what resources could provide answers to our “need to know” questions**

2.1. MAKE MORE MONEY?

For example, some answers could be found through research — such as a comparison of earnings in jobs requiring college degrees vs. jobs that only require a high school diploma — and some might need to come from actually talking to people. Students should recognize, or be coached to see, that the best way to get more information at this point is to talk to AJ — so tell them AJ will be here in a minute for a meeting.

6. **Students take 2 – 3 minutes , working in pairs or small groups, to plan questions to ask AJ**
7. **IF THEY ASK for it, students receive the handout “Earnings by Education Level”**, with data comparing earnings over a lifetime by level of education. This information may give students ideas for what to discuss with AJ, and should be very briefly discussed as a class. If students do not request this information, the handout may be held for the debrief as an optional discussion piece if the teacher wants to use it.
8. **Students ask questions during a “live” meeting with someone playing the role of AJ**
 - AJ is reluctant to talk, but eventually reveals details about the decision to drop classes.
 - For suggested responses to questions, see “Guidelines for Conducting the Interview and Playing the Role of AJ” below.
 - After AJ reveals the “secret”— that he/she needs more money to help support the family since the father was laid off — the interview ends.
9. **Revisit the Know/Need to know lists and revise the Driving Question as a whole class.**

Point out that students now have answers to some of their “need to know” questions — and that the list of “what we know” has lengthened. To save time, you do not actually have to write new items on the lists. However, do ask students if they think the riving Question still fits or if they want to change it, and do so. A new Driving Question might be:

How can we, as the counseling team, talk more with AJ and his/her parents, so we can help him/her graduate on time and go to college?

10. **Wrap-up:** Explain that although they may not have all the answers to their “need to know” questions, it is now time to propose solutions, or at least say what they would do next. Allow 2 – 3 minutes for students working in pairs or small groups to brainstorm possible solutions, then share them aloud and evaluate them.

Sample of possible solutions:

- Try to rearrange AJ’s class schedule so he/she can complete courses required for graduation and still work the required hours.
 - Talk with AJ’s parents to try to find a way to keep AJ on track for graduation and attending college.
 - Go ahead and do what AJ wants.
 - Recommend independent study or the Graduate Equivalency Diploma (GED).
11. **Debrief with the whole class by leading a brief discussion about both the economics content and the process of learning in PBL.**

Content Notes: Discuss the economic concepts of *scarcity*, *trade-offs*, and *opportunity cost*:

- Since the time available for work is a limited, or scarce resource, AJ must consider the trade-offs between work and further education.
- Point out that the cost of AJ’s decision can be thought of in terms of what he/she gives up — the opportunity cost — by working more hours to make more money now versus going to college and earning more later. If you wish, introduce the data comparing earnings of college graduates vs. high-school-only graduates.

Process Notes: Discuss what this activity demonstrates about Project Based Learning:

- There is no *single right* answer to the problem in the scenario — it is “open-ended”— but there are *wrong* answers. For example, denying AJ’s request without further discussion or contact with his/her family would probably be a mistake.
- ***It is important to be persistent.*** During the “live” interview, encourage students to find different ways to ask AJ the same question. During the debriefing, point out that persistence is an important “habit of mind” for PBL.
- ***Frustration is OK — it is an important part of PBL.*** Ask students if they were frustrated at any time during the process. This often leads to a discussion of how students become frustrated during research or other inquiry-based assignments when they cannot find the answers easily. Just as BIE’s teacher workshop leaders do during this exercise, teachers in the classroom should allow for some frustration but also offer coaching if students are getting too far off track. Focus students back on the “need to know” list when they are having difficulty thinking of questions to ask AJ.
- ***The “Driving Question” and the “know/need to know” lists are important tools*** for keeping on task and focused on the problem to be solved as it evolves.
- ***Good PBL gets students to ask questions about content.*** Asking questions demonstrates that students are open to learning, which can lead to “teachable moments.” Rather than give students the answers too quickly, record questions as they come up and have students investigate. In this activity, the information on average earnings by level of education was handed out, but it could have been easily researched by students if there was more time.
- ***New information leads to shifts in perspective — and new questions.*** For example, learning that AJ needs more money to support his/her family, not for frivolous expenses, creates a major shift in the way students think about the problem, and new “need to knows” could be identified.
- ***Decisions are often made under conditions of uncertainty.*** Just like people in the real world, students do not always have complete information on which to base decisions. Some of the items on the “need to know” list in the “Make More Money?” activity may not be answered, but that doesn’t mean reasonable solutions to the problem can’t be proposed.

You are a high school teacher who is also on a counseling team, and one day in September you receive this note from a student your team counsels:

Dear Counselors—

I want to drop some of my classes this semester. I know this means I won’t graduate on time but I’m a senior and can make my own decisions since i just turned 18. I probably won’t go to college right away either. I want to work more hours at my job so i can make more money. PLEASE DON’T INVOLVE MY PARENTS IN THIS.

A J Jones

You have always thought AJ was doing just fine in school. But then you remember hearing that AJ’s grades have been slipping lately and AJ has seemed somewhat distracted and withdrawn. You decide to take this to the counseling team for action.

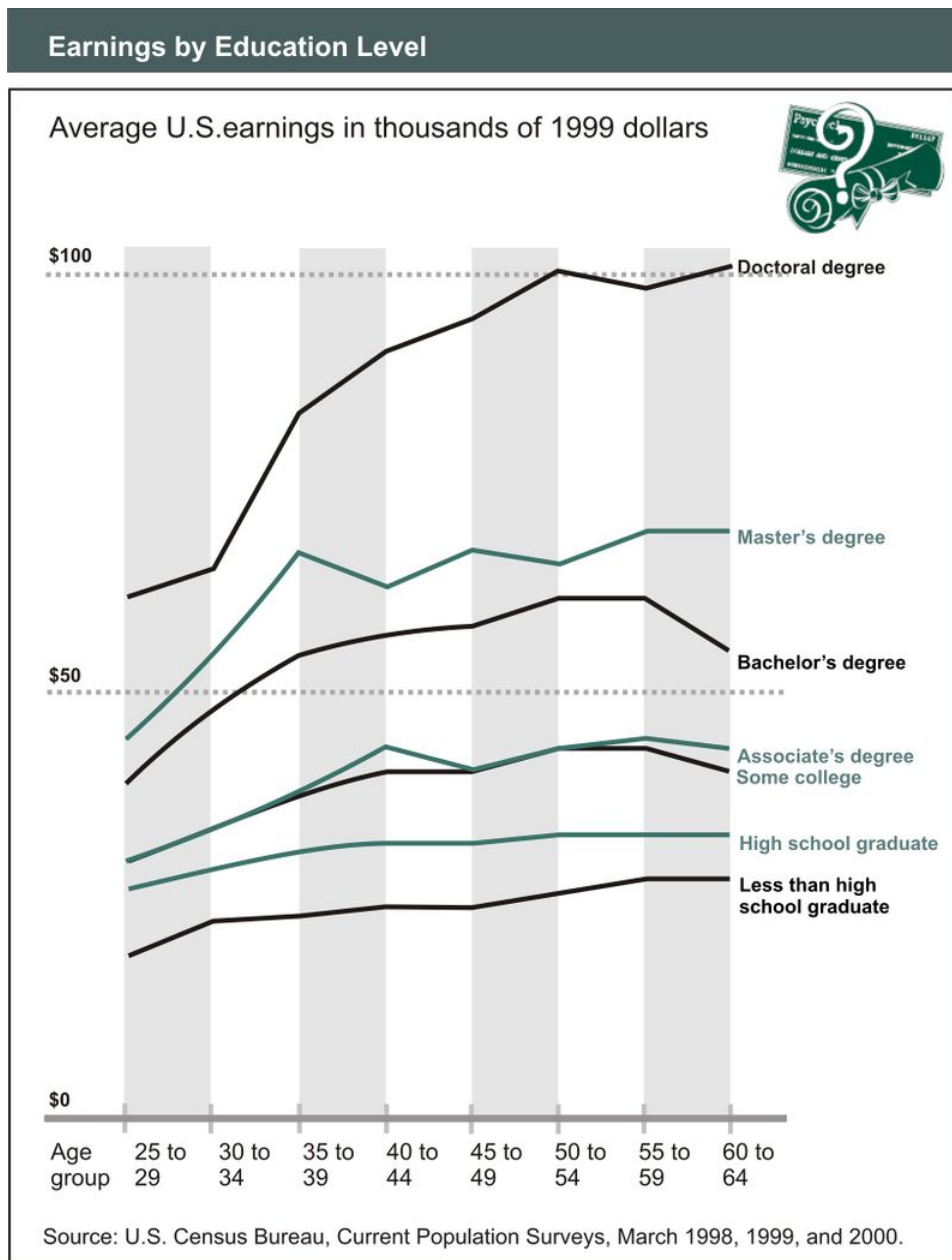
Guidelines for Conducting the Interview and Playing the Role of “AJ”

- The role of AJ may be played by a male or female — either the teacher, another adult, or a competent student who has been rehearsed.
- AJ should be very reluctant to talk at first. Avoid answering direct questions by saying things like, “It’s a personal decision.”— “I just want to work more hours”— “I’m 18 and can handle myself”— “It’s nothing to do with not liking school or having trouble or anything.”
- Slowly reveal the following information, when asked about it:
 - Job is at a local supermarket; bagger and stocker now but could become a checker soon
 - Hourly wage is \$8.00
 - Now work 15 hours a week, want to increase it to 40

2.1. MAKE MORE MONEY?

- May have appeared withdrawn and distracted because of this decision, but nothing else is going on (relationships are good, no drug/alcohol abuse, no physical or mental problems, no difficulties with school, etc.)
- Want to drop government, economics, and English classes and keep art, yearbook. Not taking math or science this year but have taken three years of each.

- Be evasive about what the money is needed for — “Oh, I just want to buy stuff”... “My cell phone bill is pretty big”... “I might get a car, better clothes, just spending money for going out with my friends, you know...”... “And I’ll save some money too.”
- Show discomfort when talking about your parents. Say you do not want to involve them because, “I’m 18 and can make my own decisions”... “I don’t want them to stress about me”... “They’ve got my two brothers and sister to worry about”...
- If asked, “Why not wait to work more until after you graduate?” AJ should respond, “I really need the money now.” (This should be said in a way that begins to raise suspicions, and/or show discomfort with body language and facial expressions.)
- If the group is getting too frustrated and/or you wish to end the activity, give a clue about what question to ask to get AJ to reveal the “secret” by saying, “My family... I mean, I really need the money now.”
- Upon further questioning, it should be revealed that AJ’s father has suddenly been laid off from his job (you could choose something in a downsized sector of the economy — computer programming, auto parts factory, etc.). AJ feels like he/she should work to help support the family, but they would be ashamed to admit it, and would not want AJ to do this.
- ***After this last piece of information is revealed, the meeting ends and “AJ” leaves.***



Source: U.S. Census Bureau, Current Population Surveys, March 1998, 1999, and 2000.

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available

2.1. MAKE MORE MONEY?

for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

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CHAPTER 3

Running in Place

CHAPTER OUTLINE

3.1 RUNNING IN PLACE

3.1 Running in Place



Unit Overview

Time Required

4-5 hours of class time

Project Scenario

A free market economy is driven by invisible markets in which consumers (households) and producers (firms) interact. In the product market, firms sell what they produce to consumers who purchase goods and services they are able and willing to buy. In the factor market, firms hire workers, purchase capital, and use land and resources to produce the goods they sell in the product market, and consumers sell their services for income in order to purchase the goods in the product market. When a firm sets up production, it must make decisions that involve tradeoffs and opportunity costs. To explore these economic concepts, students are presented with the following problem-solving scenario in this project:

Holden Grant, a successful producer of reality television shows, is tired of the television business and wants to start a company that produces athletic shoes. He knows, however, that he does not know enough about basic economics to be able to speak persuasively as an entrepreneur when setting up his corporation. Holden turns for help to his daughter Jen, who is completing her Master's Degree in economics. He asks Jen and a couple of her friends to explain the U.S. market economy, the relationship between consumers and producers, and the factors of production. Holden also asks Jen to explain his options when deciding how to set up production and for whom to produce. Since he's used to being a visual thinker, he asks Jen to create a diagram when she and her friends present their explanation.

Concepts to be Learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- Capital
- Consumers
- Corporation
- Entrepreneur
- Factor Market (Resource Market)
- Firm (Producer)
- Labor
- Land

- **Market**
- **Market Economy**
- **Money**
- **Opportunity Cost**
- **Product Market**
- **Resources**
- **Scarcity**
- **Tradeoffs**

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- **Circular Flow Diagram**
- **Command Economy**
- **Traditional Economy**

Placement in Curriculum

Running in Place is designed to be the first *Project Based Economics (PBE)* unit students complete, since it concerns the basic relationship between producers and consumers in a market economy.

Running in Place assumes no prior knowledge of economics and can be used near the beginning of a typical high school economics course. Prior to starting the unit, however, it is recommended that teachers use “**Make More Money?**”, BIE’s 45 – minute activity that introduces students to the project based learning methodology.

Sequence and Key Content of PBE Units

Essential Units:

- a. **Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- b. **The Invisible Hand** – free markets and supply incentives
- c. **Monopoly’s Might** – competitive markets and supply/demand forces within them
- d. **The Greater Good** – comparative advantage and free trade
- e. **The President’s Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)

NCEE Content Standards Addressed

Running in Place addresses the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standards.

TABLE 3.1:

Standard #	Economic Concept
1	Scarcity
3	Market Systems (allocation of goods and services)
7	Market Economies
10	Economic Institutions
11	Money
3.1. RUNNING IN PLACE	

Running in Place can also be used to teach the following standards:

TABLE 3.2:

Standard #	Economic Concept
5	Free Trade & Voluntary Exchange

Project Based Learning and Project Based Teaching

Definition of PBL

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

Components of Project Based Economics Units

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with

a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”

- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The **Driving Question** is written in a way that focuses students on the exact problem they need to resolve. The Driving Question is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class’ unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are *not* economic terms — may also be defined on the spot, if necessary for understanding. **NOTE:** The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

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Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CDROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity. In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- **Notes to the Teacher:** At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
 - Arrange for peers to check each others’ understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer's if they have swapped and read each other's logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
 - Talking with certain students or groups to address their misconceptions and misunderstandings
 - Giving additional textbook reading assignments, and/or directing students to online resources and explanations
 - Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make

3.1. RUNNING IN PLACE

notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Maximizing the Effectiveness of Project Based Teaching

- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE* unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.
- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching Running in Place

Sequence of the Unit

Like the other BIE *Project Based Economics* units, students complete **Running in Place** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school Economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible — at least during the first several times **Running in Place** is taught. Each instructional activity is discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

3.1. RUNNING IN PLACE

Launching the Project

1. Students receive the **letter from Holden Grant** and discuss it as a whole class.

Framing the Inquiry

2. Students develop the **initial “know” list** with the teacher (whole-class discussion).
3. Students develop the **initial Driving Question** with the teacher (whole-class discussion).
4. Students develop the **initial “need to know” list** with the teacher (whole-class discussion).

Problem-Solving and Learning Activities

5. Students view **part one of the video** with interviews of consumers of shoes and discuss it as a whole class.
6. Students **revise the know/need to know list** with the teacher (whole-class discussion).
7. Teacher provides **clarifying lesson # 1** on *product markets*.
8. Students view **part two of the video** with interviews of individuals associated with shoe production and discuss as a whole class.
9. Students again **revise the know/need to know list** with the teacher (whole-class discussion).
10. Teacher provides **clarifying lesson # 2** on *factor markets*.
11. Students individually write **first Project Log entry**.
12. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
13. Students **work on the problem**, creating a production tradeoffs matrix (in small groups).
14. Teacher provides clarifying **lesson # 3** on *market economies*.
15. Students individually write **second Project Log entry**.
16. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
17. Students **finalize the Driving Question** with the teacher (whole-class discussion).
18. Students review the **final know/need to know list** with the teacher (whole-class discussion).
19. Teacher **shares supplied rubric with students** to guide their work.

Presentation, Assessment and Debrief

20. Students **plan their explanation** of the relationship between producing and buying shoes as it relates to Holden’s firm (in small groups).
21. Students **present and explain their solutions** to other students and the teacher (in small groups).
22. Teacher **uses supplied rubric to assess** visuals and explanations.
23. Teacher conducts a **debrief to clarify and consolidate** students’ understanding of circular flow and other key economic concepts.
24. Teacher manages **student reflection** on the 21st century skills practiced and the process of learning in PBL
25. Teacher uses supplied **multiple-choice test** to assess individual students’ knowledge of circular flow and other key economic concepts.
26. Teacher makes **notes on adjustments to the unit** to improve student learning for the next time the unit is taught.

Step-By-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

0. **Teacher prepares for successful project implementation.**

There are a number of issues that must be considered before embarking on a project with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance (textbooks, articles, websites, etc.)?
- Do all students have the skills they need to tackle the project — including basic literacy skills as well as the ability to work in teams, make presentations, and conduct research? If not, is it necessary to pre-teach some of these skills, make sure students who need it have adequate support, or deal with these challenges in other ways?
- How will student groups be formed? (*See comments in Section II*)
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the library/media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/minilecture materials are ready — or at least underway.

Special notes on video recordings used in this unit:

- A video recording provides more information to students shortly after the project is launched. This video may be downloaded or ordered on a DVD from the BIE website, www.bie.org. A transcript of the video is provided in Section IV, *Student Materials*.

Launching the Project

1. **Students receive the letter from Holden Grant, read it aloud and discuss it as a whole class.**

The letter from Holden Grant may be found in Section IV, *Student Materials*.

Have one or more students read aloud the Entry Document while the whole class focuses on it. The letter could be projected so it can be read by the whole class. Alternatively, copies of the memo can be duplicated and passed out to students, or viewed online as an email or document posted to a website.

Potential Hurdle: Because this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of Letter: Holden Grant is a successful producer of reality television shows. He is tired of the television business, and wants to start a company that produces athletic shoes. Holden knows, however, that he does not know enough about basic economics to be able to talk persuasively as an entrepreneur with potential investors. He turns for help to his daughter Jen, who is completing her Master’s Degree in Economics. Holden asks Jen and a couple of her friends to explain how his shoe company fits into the U.S. market economy, the relationship between consumers and producers, and the factors of production. Holden also asks Jen to explain why the type of shoe he produces determines how he produces it. Since he’s used to being a visual thinker, he tells Jen that she can create a diagram to help him understand.

Economics Content Note: The letter contains a number of economic terms, such as factor market, production, product market, consumer, factors of production, and producer. This is intentional. It is assumed that students will either not understand these terms or have misconceptions regarding their meanings. **Do not**, at this point, explain to students the meaning of these terms. Tell students they should put these terms on the list of what they “need to know” to solve the problem. Figuring out the meaning of economic terms is something students should, as much as possible, do for themselves (with the teacher’s monitoring and guidance) once they begin working to solve the problem.

Framing the Inquiry

2. **Students develop the initial “know” list with the teacher (whole-class discussion).**

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Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Know List

What do we know?

- Holden made lot of money from producing reality TV shows
- There was an unfortunate incident with a bungee cord
- Holden wants to start a new athletic shoe corporation
- Holden doesn't know much economics and is embarrassed
- Jen is Holden's daughter, and she is an economics Masters Degree grad student
- Holden is a visual thinker
- His assistant made a video of people who buy and make shoes
- He will need to convince others to give him money
- We need to explain why the type of shoe Holden produces determines how it is produced
- Holden is helping Jen pay for her education

3. Students develop the initial Driving Question with the teacher (whole-class discussion).

Once the Holden Grant letter is discussed, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole class discussion. A Driving Question is a succinct declaration of the general problem students are to solve. In PBE, it takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial Question may look something like:

How can we, as **Holden's daughter and economics MA candidates**, educate Holden **about the buying and selling of shoes**, so that **he can set up a successful shoe production corporation?**

At this point, it is OK if the problem statement is somewhat ill-defined. It is not necessary that the problem statement contain economic terms or, if it does, use the economic terms correctly. The problem statement will become more refined as students learn more, and as new developments in the problem scenario unfold.

4. Students develop the initial need to know list with the teacher (whole-class discussion).

The next step in the problem solving process is to coach students to identify information they need to know in order to answer the Driving Question. Again, guiding students to pay close attention to all parts of the Entry Document, create a “What Do We Need to Know?” list. If students are missing a key piece of information about the scenario, the content, or their task, ask questions to elicit items for the list. *This is critical because everything students are taught in the unit must spring from this list.*

At this point in the problem-solving process, students will probably list things that they actually do *not* need to know. Allow students to do so. The class will return to the know/need to know list again later, having learned more about

what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of Project Based Learning is to distinguish what information is and is not necessary to successfully answer the Driving Question. As much as possible, encourage students to identify irrelevant information on their own.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Need to Know List

What do we need to know?

- What are a partnership and a corporation?
- What is a factor market?
- What is a product market?
- What is a market economy?
- What happened with the bungee cord?
- What is a MA in Economics?
- What do shoes cost to make?
- What is an entrepreneur?
- Who else makes shoes — what is the competition?
- How long do we have to solve this problem?
- Can the shoes be made in other countries?
- What kind of shoes do people want?
- Why doesn't he just buy Nike or some other shoe company?
- What kind of visual representation are we supposed to make?

Problem-Solving and Learning Activities

5. Students view part one of the video with three interviews with consumers of shoes.

The video interviews may be ordered on a DVD or downloaded at www.bie.org.

A transcript of the video may be found in Section IV, *Student Materials*.

Introduce the video by reminding students that Holden referred to it in his letter, and asked for help in making sense of it. Ask students as they watch to write down the reasons why the people in the video buy shoes.

The three short video segments (8 minutes total) portray three consumers who have different reasons for buying shoes:

- Abby Crawford is a style-conscious teenager who admires Anthony Beckett, a famous professional basketball player. She collects the pictures of Anthony that come with each shoe purchase. She provides the link between consumer demand for shoes and the “high priced” Anthony Beckett.
- Dan Fix is an avid runner. He buys athletic shoes only if they help prevent injury and are designed specifically for runners to improve performance. He provides the link between consumer demand for shoes and a certain type of product.
- Bob Jones is a working American father who buys shoes for his children. He is extremely concerned about the price of shoes because he has four children. He provides the link between the price of shoes and the quantity purchased.

After all of the videos from consumers are shown, or after each video, ask what seems to be important to consumers when purchasing shoes. Examples that students might suggest include:

- looks/image

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- price
- functional design
- quality
- famous athlete used to sell shoes
- photos given away with shoes

Potential Hurdle: Some students might tend to ridicule — and then ignore — some individuals in the video. Students must be coached to see that by ignoring groups or individuals (e.g. early-teens) they will greatly reduce the number of potential buyers of shoes.

Economics Content Note: The information in the video is carefully selected. It is intended to illustrate issues that firms must consider when selling in the product market. Each person’s message in the video is designed to provide a link between production and consumer demand by outlining the characteristics of the shoes various consumers want. The interviews add layers of complexity to the problem and provide information about the determinants of consumption. Students should begin to see the linkages that exist between consumers and producers and the role that consumers play in determining how shoes are produced. These linkages lie at the heart of a market economy and can be contrasted with a command economy, in which the direct link between consumers and producers is broken.

6. Students revise the know/need to know list with the teacher (whole-class discussion).

If you wish, revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students might want to add some new items to the list.

Sample items for revised know/need to know list:

What Do We Know?

- Different groups of consumers have different reasons for buying shoes, including quality, style, and price
- Some consumers buy shoes because they look good, they are trendy and endorsed by a famous athlete, and they get promotional giveaways
- Anthony Beckett is a famous athlete
- Runners need strong, comfortable shoes
- Young children grow out of shoes quickly
- Price is the most important consideration for many people in buying shoes

What Do We Need to Know?

- How can we determine demand?
- How are shoes made?
- What sport does Anthony Beckett play?
- Which market does Holden want to go after?
- What doesn’t Holden understand about these videos?
- What shoes are the most profitable?
- How big is each market segment?

7. Teacher provides clarifying lesson # 1 on product markets.

Clarifying lesson #1 should build students’ understanding of product markets and the role price plays in determining what will be bought and sold, and how money helps markets function. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: In this lesson emphasize the following:

- How market forces, prices, and competition determine what is bought and sold
- How product markets develop
- How money helps markets operate smoothly

8. **Students view part two of the video with four interviews with individuals associated with shoe production and discuss it as a whole class.**

A transcript of the video may be found in Section IV, *Student Materials*.

Introduce the second part of the video by asking students to write down key points made by each person that Holden will need to think about.

The second set of video interviews on the accompanying DVD presents four individuals, each of whom discusses a different aspect of shoe production:

- Scott Leventhal, the agent for Anthony Beckett. Because he explicitly states that shoe companies can gain a lot of revenue from Anthony’s endorsement of the product, he provides the most dramatic link between production costs (Anthony’s seemingly large contract) and the increased demand for shoes that results from this investment.
- John Gates, the head of production at a shoe company. He explains that shoes can be produced in a number of ways, some of which are in conflict. He explicitly links production of shoes with the fashion issues that Abby raises, the quality issues that Dan raises, and the price issues that Bob raises.
- Jesus Miguel, a Latin American factory worker. He tells of the low wages, by American standards, that he receives but says his wages make his family better off by local standards. He provides the link between low wages and low cost of producing shoes, thus making the shoes more affordable for Bob Jones.
- Mack Brown, a union leader whose goal is to preserve a relatively high-cost American work force. He objects to companies reducing production costs by sending jobs overseas to lower-cost “sweat shops.” He explicitly tells students that it is the wages of American workers that buy the shoes that are produced in our economy. His explanation of why firms should hire American union labor is an explanation of the circular flow diagram. He provides the link between the wages paid in the factor market and the purchase of goods in the product market.

Economics Content Note: These videos present issues facing firms when deciding what shoes to produce. They can be used to illustrate to students that production decisions are linked to consumer demand and production constraints. Each video adds insights into the complexities of the production decision. Taken together, the videos illustrate the tradeoffs that firms have to make in trying to meet consumer demand. They also illustrate the centrality of competition in a market economy: firms compete for customers by providing a product they want.

After all of the videos of producers are shown, or after each video, conduct a whole-class discussion of what students see as important in producing shoes. Record all answers on the board, so they can be discussed individually. Ask students to point out where these issues appear to be in conflict — e.g., low price and high quality. Examples that students might suggest include:

What is important in producing shoes?

- Anthony Beckett’s contract
- Capital equipment (machines)
- Advertising/marketing

Potential Hurdle: After seeing the video, students may want to discuss and/or investigate in more depth the current issue of offshore “sweatshop” labor and outsourcing of U.S. jobs. This could become a distraction from the main flow and content of the unit, so be careful about how much to get into at this point. Encourage students who might want to pursue independent research on the issue, or let students know the class can return to this issue after the unit is completed.

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9. Students revise the know/need to know list with the teacher (whole-class discussion).

Once again, if you wish, revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students should have some new items for the list.

The revised know/need to know list might include the following new items:

Sample Items for Revised Know/Need to Know List

What do we know?

- *(previously listed items)*
- Anthony Beckett is available for \$40 million for five years, unless a better offer comes along
- His agent says Beckett is a role model and would bring in \$700 – 800 million for the company
- Shoes can be made overseas
- American union leaders say offshore factories mean a loss of jobs for American workers
- Some consumers buy USA-made products
- Materials
- Labor (workers)
- Free giveaways/promotional items
- Jesus helps support a family of four and makes 12 cents an hour, but says making shoes is better than other jobs
- High-tech robotics and highly-paid American workers are expensive
- John Gates supports using offshore labor so he can make cheaper shoes and keep profits up
- It’s difficult to meet all demands
- U.S. workers’ savings allow companies to buy the capital equipment they need to grow and expand

What do we need to know?

- *(previously listed items)*
- Is some other famous athlete available for less money?
- Can Holden raise the wages of foreign workers?
- What are the wages for other jobs in foreign countries?
- Would American workers accept lower wages?
- Would Holden still be able to make a profit by producing high-end shoes in the U.S.?
- Can Holden produce more than one kind of shoe?
- What is “capital equipment?”

10. Teacher provides clarifying lesson # 2 on factor markets

Clarifying lesson #2 should build students’ understanding of factor markets and the forces that determine the use of land, labor and capital. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: In this lesson emphasize the following:

- How resources are purchased by firms and sold by households in the factor market
- Why factor markets develop
- Why product markets determine how resources are used
- Why competition of productivity of resources determines their price
- How money helps factor markets operate smoothly

11. Students write their first Project Log entry, and answer to the following question:

How do firms know what to produce, how much will be produced, how to produce it, and for whom to produce it?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

12. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: The Project Log entries should be reviewed to determine how well students understand markets. At this stage, students may only understand that buyers and sellers come together in a market but may not understand that it is price (of a certain product) that brings together consumers and producers. Students should also be able to see that shoes are not a single product. Dan’s shoes must meet certain characteristics. Abby’s shoes must have style and an endorsement. These products are not the same. If students do not fully grasp these concepts, clarifying lesson #1 should be used to build their understanding.

13. Students work on the problem, discussing production tradeoffs (in small groups).

Place students into small groups of 3-5 (*see Sec. II for comments about forming groups*). Ask them to begin discussing their ideas for Holden’s shoe company. To coach students in using problem-solving strategies, if needed, suggest they create a matrix to weigh the tradeoffs when setting up shoe production. This matrix could be a chart showing what type of shoes could be produced, using which resources, for which consumers, and at what opportunity cost (i.e., “which consumers would *not* buy these shoes”)

A sample production tradeoffs matrix may be found in “Assessment Tools” in Section V, *Teacher Materials*.

14. Teacher gives clarifying lesson # 3 on *market economies*.

Clarifying lesson #3 should build students’ understanding of how a market economy operates. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economic Concepts* in Section V for information to include in a mini-lecture.

The CD accompanying this unit contains a transcript of a lecture and an accompanying set of PowerPoint slides, entitled *Relating Product and Factor Markets in Market Economies*. As currently constructed, this mini-lecture is comprehensive. If your students already have some understanding of product markets, they may not need to see all the slides and hear the entire mini-lecture.

Economics Content Note: In this lesson emphasize the following:

- How a market economy operates
- How firms can take different forms
- What roles firms and households play in a market economy
- How individual decision making (with property rights) are a central component in a market economy

15. Students individually write second Project Log entry, an answer to the following question:

How does a market economy coordinate factor and product markets?

16. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

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For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: Although Holden has asked Jen and her friends to prepare a visual diagram, it is important to ensure that students understand the principles and forces that underlie the diagram. By completing a second (and final) Project Log entry, students must confront the economics that is at the core of this problem. Teachers should review the Project Log to see how well students understand how markets operate and what they need to function. They should use the clarifying lesson to emphasize areas that students do not understand and to build additional knowledge to solidify their understanding of market economies.

17. Students finalize the Driving Question with the teacher (whole-class discussion).

Students should now be nearly ready to prepare a visual representation that shows how consumers and producers are brought together, and explain Holden’s options. Before they are turned loose to fill any final gaps in their knowledge, it is important to make sure the nature of the problem they are resolving and the product expected of them are crystal clear in their minds.

By returning to the Driving Question at this time, the teacher has the opportunity to confirm that students know what they are expected to do. It is doubtful that there will be major changes to the Driving Question, but it should be reviewed anyway. The final Driving Question should be something like this:

How can we, as **Holden’s daughter and economics MA candidates**, explain why **the type of shoe he wants to sell determines how he produces it**, so that **he can set up a successful shoe production corporation**?

18. Students review the know/need to know list with the teacher (whole-class discussion).

Conduct a final whole-class discussion of the items on the know/need to know list. The purpose of the discussion is to identify any final questions or issues that still need to be addressed. Also note which items on both lists are, in fact, not necessary for solving the problem — even though knowing more might make for an even better solution, if time allowed.

19. Teacher shares supplied rubric with students to guide their work.

The rubric for the visual representation and oral presentation may be found in “Assessment Tools” in Section V, *Teacher Materials*.

You may want to give one copy of the rubric to each group, rather than each student — if so, display the rubric on an overhead or computer projector so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their oral presentation skills and the appearance of their visual representation, while important, are given less weight on the rubric. If you are altering the rubric’s point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Presentation, Assessment, and Debrief

20. Students plan their explanation of the relationship between producing and buying shoes as it relates to Holden’s firm (in small groups).

Students are to use their knowledge of how market economies function to explain how the type of shoe that Holden sells determines how he produces it and what resources he uses. The explanation can be written, oral, or visual. If students create a visual, make sure they can explain orally what the visual representation means.

Students’ explanations should describe the options Holden has for setting up shoe production, suggesting specific ways to bring consumers and producers together. These ideas must remain within the context of the problem’s hypothetical scenario. Suggestions such as “Have Nike buy

Holden’s shoe company and get a prominent athlete like Kobe Bryant to endorse them” are irrelevant and sabotage the intent of the problem — to teach students specifically chosen economics concepts and develop their economic understanding of the world. More appropriate suggestions include:

- Get Anthony Beckett for promotions and endorsement and target the consumer concerned with style. This will eliminate runners concerned with function, and because it will increase the price of shoes it will eliminate consumers like the father of four.
- Use American workers to increase the quality of shoes, targeting consumers like runners who are concerned with quality and durability. This will increase the price of shoes, eliminating consumers like the father of four.
- Use cheaper off-shore labor and decrease the price of shoes to target consumers like the father of four. This will eliminate runners.
- Combine Anthony Beckett with off-shore labor and produce a moderately priced shoe. Fashion-conscious young people will purchase this shoe but union workers may not, nor will runners.
- Combine Anthony Beckett with American, union workers and produce an expensive shoe, targeting only the wealthier style-conscious consumers. If this scenario is selected, students must show they understand that the market for these shoes is limited. [The demand curve slopes down].

21. **Students present and explain their visuals to other students and the teacher.**

See Section II for general comments on presentations in PBL.

Section VI contains a list of questions teachers (and fellow students, if they are given an active role as audience members) can use to probe the presenters’ understanding of the fundamental economic issues on which **Running in Place** is based. We recommend that these (or similar) questions be used to determine whether group members fully understand the underlying economics. Although a single individual may be responsible for explaining a particular part of the visual, students should be aware that questions about any part of it could be directed to other members of the group as well.

22. **Teacher uses supplied rubric to assess visuals and explanations.**

As you listen to student presentations and review their visual representations, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts.

Clarify these during the debrief to follow.

23. **Teacher conducts a debrief to clarify and consolidate students’ understanding of circular flow and other key economic concepts.**

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students’ solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

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Economics Content Note: Although future *Project Based Economics* units will return to some of the same economic ideas and concepts, it is important for teachers to spend some time after students' presentations clarifying any misused economic concepts and ensure that students understand:

- how markets operate
- how a market economy functions
- how product and factor markets are related in a market economy
- how individual decision making leads to an efficient flow of resources
- how money makes markets function smoothly
- how scarce resources limit production and lead to tradeoffs in production

If students miss these relationships, they must be clearly stated in the debriefing. The goal of this lesson is to place producing shoes within the context of market economies and to use the circular flow diagram to illustrate how market economies operate (see an example in *Section V, Teacher Materials*). Students should easily recognize that buyers and sellers come together in two distinct markets (product and factor) and that they come together because of choice: they believe they will be better off for it. In the product market, consumers are better off because they want shoes and producers are better off because they make a profit. In the factor market, households get income (to buy shoes) from labor (for example) and firms get resources to make shoes.

Potential Hurdle: It is often difficult for students to see that the actions of competing firms are not relevant to Holden's decision about the production of shoes. Firms enter a market when there is an unfulfilled demand that can be met. Firms and individuals like Holden, in this sense, act like entrepreneurs and seek out opportunities where they can enter a market (or expand production) in order to meet consumer demand and make a profit. Their goal is to seek out these opportunities for production before competitors. If there is an unfulfilled demand for a good that can be met by making a profit, firms will fill that demand by producing that good.

24. **Teacher manages student reflection on the 21st century skills practiced and the process of learning in PBL.**

Students should have a chance to discuss the process of learning in PBL, and to reflect on their use of 21st century skills such as critical thinking, collaboration, and presentation. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible “right answers” to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

25. **Teacher uses supplied multiple-choice test to assess individual students' knowledge of circular flow and other key content.**

The multiple-choice test for this unit may be found in “Assessment Tools” in *Section V, Teacher Materials*.

26. **Teacher makes notes on adjustments to the unit to improve student learning for next time.**

Teachers inevitably recognize how to make the **Running in Place** unit more effective after they have taught it. We encourage you to note these thoughts quickly, so you can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school economics teachers. We include their advice about avoiding potential problems below.

- Avoid making this a *marketing* assignment — student presentations must stay focused on the relationship between product and factor markets.
- Avoid making the problem about *raising venture capital from investors*. That is, do not have students play the role of business-development consultants instead of economists. Otherwise students tend to focus on the financial investment side of the problem (e.g. rates of return on investment) and are distracted from the flow of resources.
- Avoid using a brand name of athletic shoes. Students have difficulty maintaining focus on markets when a specific brand name is used. By using examples from a “real life” shoe company, students focus on specific problems surrounding a specific company (e.g. competitor’s actions) and are diverted from an understanding of the relationship between product and factor markets.

Extensions to the Unit

- It would be easy to contrast market economies with command or traditional economies when discussing how market economies operate. By contrasting the allocation of resources in a free market with their allocation in a command or traditional economy, students can be shown alternative ways of setting production (e.g. through government dictates). This topic is also addressed in the next *PBE* unit, **The Invisible Hand**.
- This problem could be used as a lead-in to other units of your own design. For example, a discussion of off-shore labor (via Jesus Miguel) could lead into a unit on NAFTA and free trade. Or, by emphasizing John Gate’s discussion of production costs, the teacher could move easily into a unit on long-run and short-run production costs.
- Finally, feel free to bring in additional issues in the selling of shoes that relate directly to their production. For example, if consumers tire of running/jogging and start playing racquetball, the design of the shoe, the type of material used (for example) must be altered. Also, feel free to augment the lecture using other products as examples, especially in class discussion during the debriefing.

Student Materials



Dear Jen,

Hope your final semester in grad school is going well. I’ve got a little favor to ask. As you know, I’m increasingly tired of producing reality shows, despite their appeal to American viewers. I can’t take it any more, especially since the unfortunate incident with the bungee cord malfunction, and I’m going to get out of TV entirely. I’ve always enjoyed sports and fitness, and now my dream is to start an athletic shoe company.

3.1. RUNNING IN PLACE

Although I've made lots of money through the partnership I established in producing reality shows, I now want to set up a corporation so I can raise the money needed to start producing shoes. But before I do anything, I'm going to need a crash course in economics so I can speak persuasively as an entrepreneur. I know nothing about how a market economy operates and how my new firm might fit into it. I vaguely remember something about product markets and factor markets—or was it factors of production?—from that econ course I slept through in college, but I need to upgrade my knowledge considerably. I'm too embarrassed to ask some economist I don't know—and I wouldn't want the word about my ignorance to get out. Could you and perhaps a couple of friends in your Economics M.A. program help me?

In thinking about how to learn more economics quickly, I had one of my assistants shoot some video interviews with people who buy shoes (consumers, right?) and people who make shoes (producers—I guess I do know a little). I've looked at the footage, and I'm sure there are some real insights in the videos, but I just don't get it. It seems like how I set up production somehow determines who will buy my shoes, but I do not understand how or why. I want to start out slowly, so I'll only produce one type of shoe for now.

So basically, when you tell me about a market economy, I need you to explain why the type of shoe I sell determines how I produce it and what resources I use. I'm a visual thinker, so if you wish use visual aids in your presentation to help me understand all this. I'll send you the video right away and I hope we can get together later this week.

Thanks—one thing I do know about economics is that your college loan repayment checks will keep on coming if you help me make this dream a reality.

Dad

Transcript of Video Interviews of Consumers of Shoes

VOICE-OVER NARRATOR (Mr. Holden's assistant): At your request, Mr. Holden, the following three video interviews were conducted to determine what people look for in athletic shoes and what motivates them to buy. The first person interviewed was Abby Crawford, a style-conscious teenager.

1. ABBY CRAWFORD (teenager):

You want to know what shoes my friends and I like best? That's easy. Anything, I mean ANYTHING that Anthony Beckett wears. I mean, all you have to do is just look at him! He's gotta be the most famous athlete in the whole world, and he's TOTALLY AWESOME! I mean, his shoes are REALLY, REALLY HOT! Well, the colors and styles are okay, too, but we buy 'em because Anthony wears 'em and, besides, we get a different picture of him every time we buy a pair! And you can't find these pictures anywhere else! I've been collecting them for over two years now, and I've got SEVEN! And Janelle, my best friend—she's so lucky!—she's got TWELVE! Oh, my God, Anthony is just my *dream* man!

VOICE-OVER NARRATOR (Holden's assistant): The second interview was with Dan Fix, age 35, an avid runner.

2: DAN FIX (runner)

I run at least 5 miles a day, probably 40 miles a week. And, you know, I'm not exactly a kid anymore. I've got to be really careful about injuries and protecting my legs and feet. Road shock is my big concern. So, I'm always looking for shoes that are going to give me the right support. They need to be well padded but they can't be too soft. When I run, they have to bend at the ball of my foot so I can push off correctly; otherwise, it'll put extra stress on my legs and I'll have to work harder. And the heel's really important, too. It has to be wide enough to support my feet when they land. So, there are lots of things I'm looking for in a shoe, and I just won't buy shoes that don't give me the right kind of protection.

VOICE-OVER NARRATOR (Holden's assistant): Our third interview was with Bob Jones, age 45, a working man with a family. He has entirely different needs.

3. BOB JONES (factory worker):

My wife and I have four kids. I don't make much money, but I try to provide for my family as best I can. My kids

are always needing new shoes. They either outgrow them or outwear them really fast, so we don't care as much about the quality as we do about the price. That's the most important thing to us. Buying shoes can get to be really expensive these days, so we've got to be careful that they don't cost too much money.

VOICE-OVER NARRATOR: This concludes the three interviews with potential athletic shoe buyers. It was my impression after the interviews that most people have definite but different ideas about how they want their shoes made, and they will only buy the shoes that meet their own personal needs.

Transcript of Video Interviews of People Associated with Production of Shoes

VOICE-OVER NARRATOR (Holden's assistant): Because Abby Crawford seemed so obsessed with Anthony Beckett, I decided to talk with Scott Leventhal next. He's Anthony's business agent.

1. SCOTT LEVENTHAL (Anthony Beckett's business agent)

As most people know, Anthony is the leading player in the NBA—probably one of the best basketball players that ever lived. And not only is he a superstar athlete, but he's good-looking, clean-living and a genuinely nice guy with a great public image. Now he's also starring in his second movie, and he's being offered endorsements from everyone!

A couple of years ago, the CEO of a large shoe company approached Anthony to endorse their shoes. They thought he was a perfect fit because of his appeal to young people. And his fans associate him with the products he wears.

Anthony liked their proposal. He would help design the shoes. It was a five-year contract with a three-year renewal possibility, worth lots of additional money. And, best of all, Anthony would be paid 40 million dollars over the first five years of the contract.

Now that may seem like a lot of money, but Anthony's a superstar—his endorsement will bring in 700 to 800 million dollars in revenue for that company!

So Anthony is definitely committed to this new line of shoes—his picture can be seen everywhere—and he will continue to endorse these shoes—as long as no other shoe company makes a better offer.

VOICE-OVER NARRATOR: This interview is with John Gates, head of production for a shoe manufacturer. I asked him to tell us a little about the factors that determine how shoes are produced.

2. JOHN GATES (production manager)

You know, the shoe business isn't easy. People don't realize how difficult it is to make and sell athletic shoes. I mean, everyone wants something different. Runners, they demand well-padded, flexible shoes that will protect them from injuries. And fashion-conscious people, well, they want something trendy, and they look for image. And most families are price-conscious. So it's a pretty fickle market.

Can we please everyone? It's possible, but it involves some hard choices.

At our company, we've chosen to go outside the country to get our shoes made. We hire unskilled workers and pay them very low wages. They'll make any kind of shoes from any pattern. They don't care, they're just happy to have jobs and be paid anything at all.

We *could* use high-tech robotics and high-cost American union members to get very high-quality shoes. Hey, but we don't have to do that. Our unskilled labor can make the same kinds of shoes at a very low cost, and we can afford to sell them at discount prices and still keep our profits up.

VOICE-OVER NARRATOR: I decided to interview Jesus Miguel, a typical factory worker for a shoe manufacturer south of the border. He told us what a job in his hometown has meant to him and his family.

3. JESUS MIGUEL (factory worker)

I'm 15 years old and I've lived all my life in this town. We used to have copper mines here, but they all closed down and now it's hard for anyone to find work. We can't farm here in the desert, so most people have to move to other places to find jobs. I'm lucky. I've got a job in the shoe factory, so my family can be here. I work ten hours a day, five or six days a week, and I earn 12 cents an hour. It's really hard work, but it buys food for the six people in my family. It's much better for us now than it used to be.

3.1. RUNNING IN PLACE

VOICE-OVER NARRATOR: My final interview was with Mack Brown, a union leader and a leading advocate for American workers.

4. MACK BROWN (union leader)

Many American workers belong to unions. In fact, our American economy was built by skilled union workers who devoted their lives to producing quality products—quality work which has made us one of the strongest economies in the world.

But today many companies are shipping their jobs overseas. They hire women and children in third-world countries at slave wages. But these workers are not consumers for these products. They can't afford them. Americans are the buyers. And it's the wages paid to American workers which allows them to buy the products. Wages paid to American workers go toward buying shoes, clothes and other goods, as well as into savings. And it's savings that allow companies to buy the capital equipment they need to grow and expand.

So what happens when jobs are shipped overseas? American workers lose their wages, companies lose the ability to expand, and our economy loses the ability to produce. Without American labor, production in this economy will come to a halt. It's a lose-lose situation. I believe that we should hire American workers who buy American products, and that way America's economy will stay strong.

Teacher Materials

Economics Review

Circular Flow

Market System

The basic coordinating mechanism of a capitalist economy is a market (and the price system). Capitalism is a market economy. Decisions are made by buyers and sellers of products (in the product market) and resources are turned into products via the exchange of resources (in the factor market). In our problem, the product market is the market in which shoes are bought and sold and the (primary) factor market is the market in which labor is hired and paid wages.

The preferences of sellers and buyers are registered on the supply and demand sides of the markets. The outcome of these choices is a system of product (e.g. shoes) and resource (e.g. labor) prices. These prices provide households (as resource owners and consumers) and firms (as resource purchasers and producers) with information to make and revise decisions in furthering their self interests.

The market system is an elaborate communication system through which innumerable individual choices are recorded, summarized, and weighted against each other. Prices are the means of communication. Firms and households who pay attention to the market's signals (i.e. prices) are rewarded while those who ignore the market's signals are penalized. Through the price communication system and individual responses to it, society decides what the economy should produce, how production is organized, and how rewards and penalties are distributed. That is, the market system is the mechanism through which society decides how to allocate resources and distribute output as well as the system through which these decisions are carried out. In societies that are not grounded in capitalism, these decisions are made through non-market mechanisms (e.g. government, tradition).

Operation of a Market-Based Economy

In a free market, money-based economy, households, as resource owners, sell their resources to firms for money income. As consumers, households spend their money income buying goods and services. Firms must spend money in order to buy the resources used to produce goods and services. Their finished products are then sold to households in exchange for money. The net result is a counter clockwise real flow of economic resources and finished goods and services and a clockwise money flow of income and consumption expenditures (see diagram on page 40). These flows are simultaneous and repetitive.

The Circular Flow diagram illustrates the flow of real resources and money in a market-based economy. In this economy, there are two groups of decision makers—households and firms.

The coordinating mechanism that brings the decisions of households and firms into alignment with one another is the market system.

Factor Market

The bottom half of the diagram shows the Factor Market. In this market consumers (households), who directly or indirectly (through their ownership of business corporations) own all economic resources, supply resources to producers (firms). Producers, of course, demand resources because they are the means by which goods and services are produced. [Note: the interaction of demand and supply for resources in the factor market establishes the price of each resource]. The payments that firms make in obtaining resources are their costs, but simultaneously constitute flows of wages, rent, interest, and profit income to the households supplying these resources.

Labor is used as the primary example of a resource in this problem but renting or buying the robotics is also an example. Resource scarcity in this market can best be illustrated by the fact that firms must pay for resources. If resources were unlimited (e.g. air), firms would not have to pay to obtain them. Anthony Beckett is the most dramatic example of a scarce resource. Because there are limits to the number of individuals with his skills, shoe companies bid up the price to pay for his endorsement. In contrast, air, because it is virtually unlimited, carries no price and would be costless as a resource in the production of shoes.

Potential Hurdle: Students often have difficulty seeing that households supply resources other than labor to the factor market. It is fairly easy for students to see that labor is paid wages to enter the “factor market.” Students can also be shown that households get interest on monies they loan to firms for purchase of capital that is used in the factor market, rent on land that is used in the factor market, and profit to savvy entrepreneurs.

Product Market

The top half of the diagram shows the Product Market. The money income received by households from the sale of resources does not, as such, have real value for them. Consumers cannot eat or wear coins and paper money. Hence, through the expenditure of money income in the product market, households express their demand for a vast array of goods and services. Simultaneously, producers combine the resources that they have and supply goods and services in the same market. The interaction of these demand and supply decisions determines product prices. Note that the flow of consumer expenditures (money) on goods and services constitutes sales revenues for producers.

Circular Flow of Resources

As the diagram implies, a complex, interrelated web of decision making and economic activity exists within a market economy. Both consumers and producers participate in both markets, but on different sides of each. Producers are on the buying (demand) side of the factor markets, and consumers (as resource owners) are on the supply side. In the product market, these positions are reversed. Households, as consumers, are on the buying (demand) side of product markets and firms, as producers, are on the selling side.

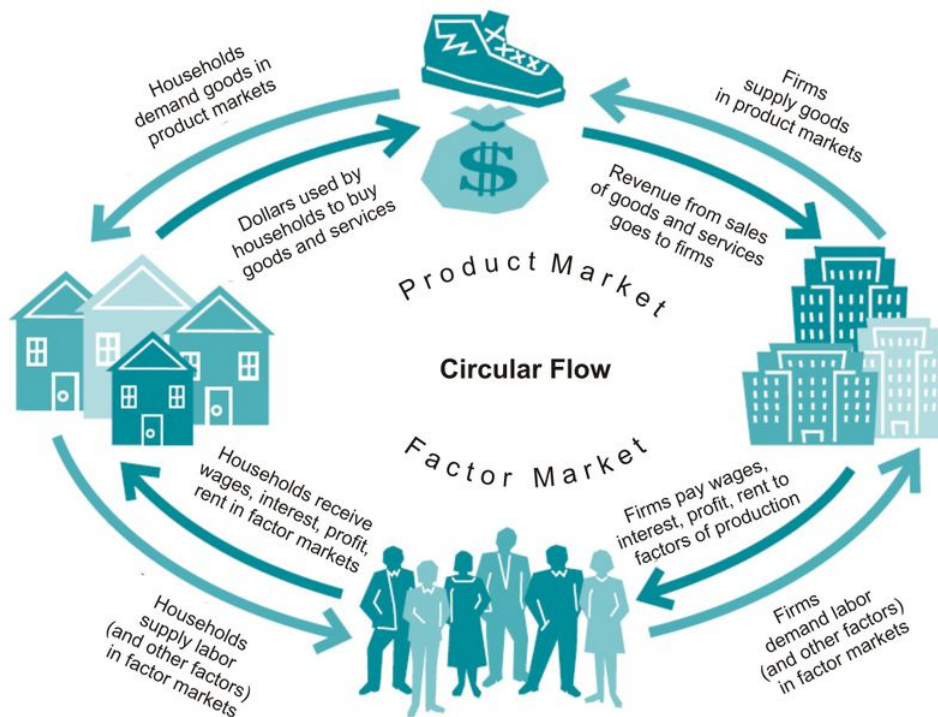
Scarcity

Scarcity underlies all of the transactions portrayed in this diagram. Because households have only limited amounts of resources to supply to firms (e.g. limited time, abilities), the household’s money income is limited. This means that each consumer’s income will go only so far in the purchasing of goods and services. A limited number of dollars clearly will not permit the consumer to buy all of the goods and services desired. Similarly because resources are scarce, there are limits to the number of goods and services that can be produced. Scarcity and choice should permeate the entire discussion of the flow of resources.

Money

Although money performs many functions in an economy, its most important function is that of a medium of exchange. Consumers must trade or exchange their labor (for example) for goods and services desired. Because consumers want a wide variety of products, they would have to provide their resources to diverse types of firms to obtain variety in goods consumed unless money is used to facilitate exchange. For example, without money if a

person wanted only food, clothes and shelter, s/he would have to provide labor for a farmer, cloth maker, and construction contractor to obtain these goods in payment. This would be quite inconvenient. Instead, the consumer can provide labor to any firm and be paid in money that can be used to purchase a wide variety of goods and services.



Concept Definitions

The curriculum is designed to teach the following concepts:

Capital: Human-made resources used to produce goods and services. These are goods that do not themselves directly satisfy human wants.

Consumer/Household: An individual who uses goods or services to satisfy needs rather than to resell them or produce other goods with them.

Corporation: A type of firm that is a legal entity separate from the people who own, manage, and otherwise direct its affairs.

Entrepreneur: An individual who bears the risks that arise from the fact that resources must be committed to the production of goods or services without knowledge of their demand. The entrepreneur combines resources to produce a product, makes non-routine decisions, innovates, and bears risk.

Factor Market (Resource Market): A market in which factors of production (land, labor, capital and entrepreneurship) are bought and sold. In aggregate terms, for instance, we have the labor market or the capital market, and, in specific terms, we have the market for a particular type of factor of production (e.g. the market for carpenters, short-term capital).

Firm (producer): An organization that employs resources to produce a good or service for profit and that owns and operates one or more plants.

Labor: The physical and mental talents (efforts) of people that are used to produce goods and services.

Land: Natural resources (“free gifts of nature”) that are used to produce goods and services. Income that is received by those who supply the economy with land is called rent.

Market: An arrangement that allows buyers and sellers to exchange things. A buyer exchanges money for a product, while a seller exchanges a product for money.

Market Economy: An economic system (method of organization) in which only the private decisions of consumers, resource suppliers, and producers determine how resources are allocated.

Money: Any item that is generally acceptable to sellers in exchange for goods and services.

Opportunity Costs: The real sacrifice involved in achieving something. The value of the next best opportunity that would have to be foregone in order to achieve a particular thing.

Product Market: A market in which households (consumers) buy and firms (producers) sell goods and services.

Resources (factors of production): Land, labor, capital, entrepreneurial ability that is used to produce (other) things to satisfy human's wants.

Scarcity: A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

Tradeoff: An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

Teachers can also demonstrate the following concepts using this lesson:

Circular Flow Diagram: A diagram showing the complex, interrelated web of decision making and economic activity. Households (consumers) and firms participate in both the factor and product markets but on different sides of each. Firms are on the buying or demand side of the factor market (e.g. where they hire workers) and households, as resource owners and suppliers, are on the selling side. In the product market, these positions are reversed. Households, as consumers, are on the buying or demand side (e.g. they purchase goods) and firms, as producers, are on the selling side (e.g. they sell goods).

Command Economy: An economic system (method of organization) in which property resources are publicly owned and central economic planning is used to direct and coordinate economic activities.

Traditional Economy: An economic system (method of organization) in which traditions and customs determine how the economy will use its scarce resources.

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5, “Meets Standards” equals a 3, and “Does Not Meet Standards” equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

TABLE 3.3: Running In Place: Rubric for Oral Presentation on Producers and Consumers

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Definition of the Problem (10%) <i>Key Aspects:</i> <ul style="list-style-type: none"> • The relationship between the production and consumption of products in the marketplace • The need to explain the relationship in layman’s terms 	Describes the problem clearly, accurately and completely in all key aspects Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics	Describes the problem clearly and accurately in all key aspects Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts “made up” to avoid grappling with key aspects of economics	Does not describe the problem clearly, accurately and/or completely in one or more key aspects Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts “made up” to avoid grappling with key aspects of economics

TABLE 3.3: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Knowledge of Economics (70%) <i>Key Terms and Concepts:</i> <ul style="list-style-type: none"> • Market economies, through price and profits, will determine <ul style="list-style-type: none"> – What type of shoe will get produced – How shoes will be produced – Who will get the shoes (how many shoes will be produced) • What gets produced in a market economy is largely determined by consumer preferences and cost of production • Producers consider costs of resources when deciding what to produce • Self interested producers and consumers determine how resources are used 	All key economic terms and concepts are explained accurately and in detail	All key economic terms and concepts are explained accurately	Some or all key economic terms and concepts are explained inaccurately, or omitted

TABLE 3.3: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Oral Presentation Skills, Group Participation, and Visual Aids (20%)	<p>Presentation is appropriate in length; it is not redundant, wordy, nor too brief in any aspect</p> <p>Presentation is clearly organized and flows well with effective transitions; it is not rushed or drawn-out</p> <p>Presentation is professional in style; it features appropriate dress, posture and gestures; a clear, strong, expressive voice; frequent eye contact; responds to cues from the audience</p> <p>All group members participate substantively and roughly equally</p> <p>Visual aids use accurate information and enhance the presentation by addressing key economic concepts</p> <p>Visual aids' layout, color, design elements, headings, and text are carefully done and professional-looking; all information is clearly readable and understandable</p>	<p>Presentation may be a bit too brief or too lengthy in some aspects; may be somewhat wordy or repetitive</p> <p>Presentation is organized; some parts may be somewhat unclear, too brief or too lengthy</p> <p>Presentation is mature in style and features appropriate dress, posture and gestures; a clear voice; some eye contact; shows some awareness of the audience</p> <p>All group members participate substantively</p> <p>Visual aids use accurate information and support the presentation by addressing key economic concepts</p> <p>Visual aids' layout, color, graphic elements, headings, and text show some care was taken; significant information is clearly readable and understandable</p>	<p>Presentation is not long enough to cover the material</p> <p>Presentation lacks organization</p> <p>Presentation style is unprofessional and/or immature; does not feature appropriate dress, posture and gestures; a clear, strong, expressive voice; frequent eye contact; awareness of the audience</p> <p>Only one or two group members participate substantively</p> <p>Visual aids have incorrect information and/or distract from the presentation, and/or do not address key economic concepts</p> <p>Visual aids' layout, color, graphic elements, headings, and text show little evidence that care was taken; significant information is unclear or not understandable</p>

Potential Questions for Audience Members During Student Presentations

1. Why did you pick the particular shoe to make? Will Holden make a profit from its production?
2. Why can't you use Anthony Beckett (or Mack Brown's union labor) and sell shoes to Bob? What would happen if Holden tried to use Jesus' labor and sell shoes to Dan? What forces in markets are at work that would prevent these pairings?
3. What kind of resources do you need to produce the shoes?
4. In what ways does the visual aid show how a market economy operates? (If a visual aid is used.)
5. What incentive exists for:
 - a. firms to buy resources
 - b. consumers to purchase shoes
 - c. firms to produce shoes
6. What would happen if:
 - a. money (currency) did not exist

- b. the government prohibits the use of offshore labor
- c. Anthony Beckett is banned from the NBA for substance abuse
- d. families like Bob's see their incomes double
- e. individuals were not free to purchase whatever shoes they wish

Sample: Production Tradeoffs Matrix

TABLE 3.4:

Production Trade-offs	No Beckett Contract	With Beckett Contract
Unskilled Labor	<p>Shoe: Low quality/low cost (least expensive)</p> <p>Consumer: Price-conscious families (Bob)</p> <p>Opportunity Cost: Stylish shoe for teens and high-quality shoe for runners</p>	<p>Shoe: Stylish (medium quality/price)</p> <p>Consumer: Image-conscious teens (Abby)</p> <p>Opportunity Cost: High-quality shoe for runners and low-cost shoe for families</p>
Skilled Labor	<p>Shoe: High-quality design, materials</p> <p>Consumer: Performance-oriented runners (Dan)</p> <p>Opportunity Cost: Stylish shoe for teens and low-cost shoe for families</p>	<p>Shoe: High-quality AND Stylish (most expensive)</p> <p>Consumer: Big-spending teens (limited market)</p> <p>Opportunity Cost: Low-priced shoe for families; runners</p>

Test for Running in Place

Name _____

PLEASE BUBBLE IN YOUR ANSWERS COMPLETELY—LIKE THIS "Bold"

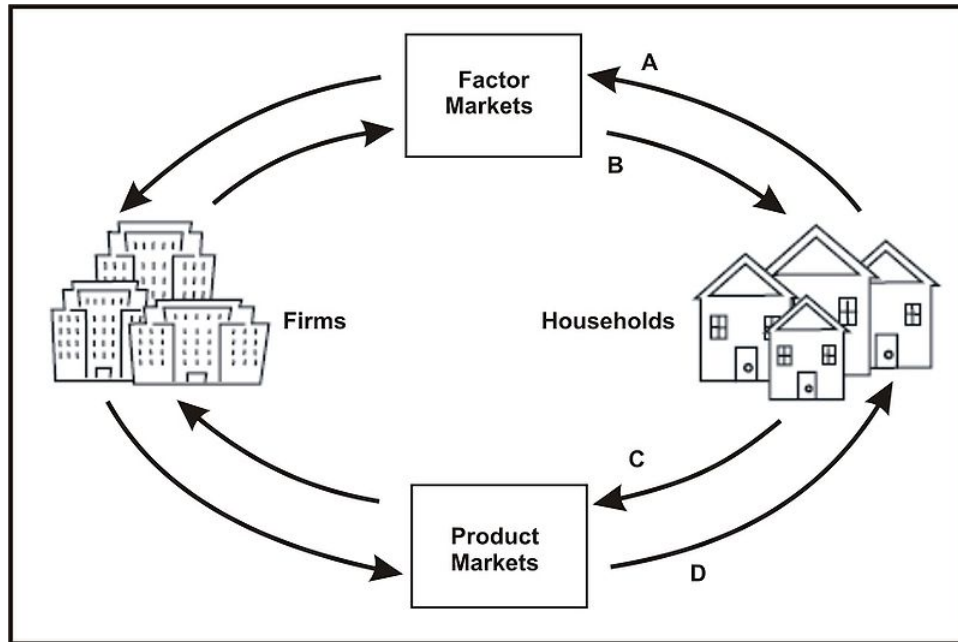
1. What is meant by the statement that every economic system faces scarcity?
 - a. There are times when some products can be purchased only at high prices.
 - b. Poor nations face scarcity, but rich nations have overcome this problem.
 - c. There are never enough productive resources to satisfy all human wants.
 - d. All economies have depressions during which scarcities exist.
2. The demand for a factor of production depends mainly on:
 - a. the supply of the factor of production
 - b. the demand for other factors of production
 - c. the supply of the products which it helps produce
 - d. the demand for the products which it helps produce
3. Most of the revenue that American business receives by selling products or services is paid as:
 - a. wages and salaries
 - b. rent and interest
 - c. profits
 - d. taxes
4. The total output of the economy is bought by which of these groups of spenders?
 - a. farmers, laborers, and households
 - b. corporations, investors, and households
 - c. consumers, businesses, and governments
 - d. investors, speculators, and manufacturers

3.1. RUNNING IN PLACE

5. When goods that people want are in short supply, market economies ration the available goods by _____ and command economies ration them by _____:
 - a. “first come, first served”; government orders
 - b. adjusting prices; adjusting prices
 - c. adjusting prices; making people wait in lines
 - d. making people wait in lines; government orders
6. Which type of economic system most accurately describes the U.S. economy?
 - a. a pure market economy
 - b. a centrally directed economy
 - c. a mixed economy, primarily dependent on the market system
 - d. an economic system equally divided among traditional, command, and market systems
7. What do capitalistic economies depend upon for the allocation of resources and finished products?
 - a. central agencies
 - b. the price system
 - c. tradition
 - d. state and local governments
8. Which of the following must exist in order for a market economy to work?
 - a. People must follow their self-interest.
 - b. People must be motivated to make a profit.
 - c. People must be free to buy and sell as they choose.
 - d. all of the above
9. Why are butchers motivated to produce hamburger in a market economy?
 - a. because consumers like hamburger
 - b. because butchers have always produced hamburger
 - c. because butchers can make profits by selling hamburger
 - d. because government regulations require a certain amount of hamburger to be made
10. Why are goods and services produced in a market economy?
 - a. because people need goods and services
 - b. because people have unlimited wants for goods and services
 - c. because people want to make profits for themselves
 - d. because of tradition and institutions
11. Which of the following is an example of a good or service usually sold in a factor market?
 - a. the services of a corporate lawyer
 - b. the services of a roofer hired to fix the roof of your house
 - c. the services of a personal financial planner
 - d. the services of a hairstylist
12. Which of the following is sold in the product market?
 - a. capital
 - b. labor
 - c. consumer goods
 - d. land
13. The purchase of electricity:
 - a. is always considered a purchase in factor markets
 - b. is always considered a purchase in product markets
 - c. sometimes could be considered a purchase in factor markets and sometimes could be considered a purchase in the product markets

- d. none of the above
14. The households in a market economy buy and sell in which markets?
- They buy in factor markets and sell in product markets.
 - They buy and sell in factor markets.
 - They sell in factor markets and buy in product markets.
 - none of the above
15. Which is a *true* statement?
- The motivating force in a market economy always comes from the factor market.
 - Finished goods are sold to consumers in factor markets.
 - It is possible that the same good could be sold in either a factor market or a product market.
 - Capital is sold in product markets.
16. A market in which resources and unfinished products are sold is called a:
- product market
 - factor market
 - goods and services market
 - wholesale market
17. Industrial robots used to make automobiles are:
- sold in factor markets
 - owned by the “household” sector in market economies
 - a form of capital investment that requires interest payments for their use
 - all of the above
18. Which of the following is a *true* statement?
- Businesses buy their inputs and sell their finished goods in product markets.
 - Businesses buy their inputs and sell their finished goods in factor markets.
 - Businesses buy their inputs in product markets and sell their finished goods in factor markets.
 - Businesses buy their inputs in factor markets and sell their finished goods in product markets.
19. Which of the following is sold in factor markets?
- finished products
 - property rights
 - consumer goods
 - resources

3.1. RUNNING IN PLACE



20. In the figure, the flow indicated by the letter A represents:
- finished goods and services
 - payments for purchases
 - rent, wages, and interest payments
 - land, labor, and capital
21. In the figure, the flow indicated by the letter B represents:
- finished goods and services
 - payments for purchases
 - rent, wages, and interest payments
 - land, labor, and capital
22. In the figure, the flow indicated by the letter C represents:
- finished goods and services
 - payments for purchases
 - rent, wages, and interest payments
 - land, labor, and capital
23. In the figure, the flow indicated by the letter D represents:
- finished goods and services
 - payments for purchases
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 - land, labor, and capital
24. Which of the following economic concepts is reflected in the circular flow diagram?
- price stability
 - economic efficiency
 - economic output
 - comparative advantage
25. Which of the following is shown in the circular flow diagram?
- the relationship between households and businesses
 - the level of business profits
 - how specialization affects an economy

- d. comparative advantage and interdependence
26. According to the circular flow diagram of a market economy, which of the following is not a characteristic of households?
- They hire resources.
 - They own capital.
 - They consume finished products.
 - They earn income.
27. Which is a *false* statement regarding the circular flow diagram?
- Households sell their resources in factor markets and buy goods and services in product markets.
 - The amount of money that households spend equals the amount that they earn by selling resources to businesses.
 - The amount of money spent by households is equal to the amount of money earned by businesses.
 - The amount of income that businesses earn is equal to the value of the resources that they sell in factor markets.
28. Which is a *true* statement regarding the circular flow diagram?
- Everyone's receipts are someone else's expenditures.
 - When the flows between households and businesses are equal, income will be equally distributed.
 - The diagram shows a system growing in a circular pattern.
 - The different parts of the diagram represent the three basic economic questions.
29. According to the circular flow of an income diagram, which economic or socioeconomic goal will be threatened if businesses do *not* buy all the resources that households wish to sell?
- economic efficiency
 - equity
 - full employment
 - all of the above
30. It would be difficult to use a circular flow diagram to analyze a command economy because:
- Businesses do not exist in a command economy.
 - Resources do not exist in a command economy.
 - There are no product markets in a command economy.
 - Households do not own resources in a command economy.

Test for *Running in Place*

Teacher's Answer Key

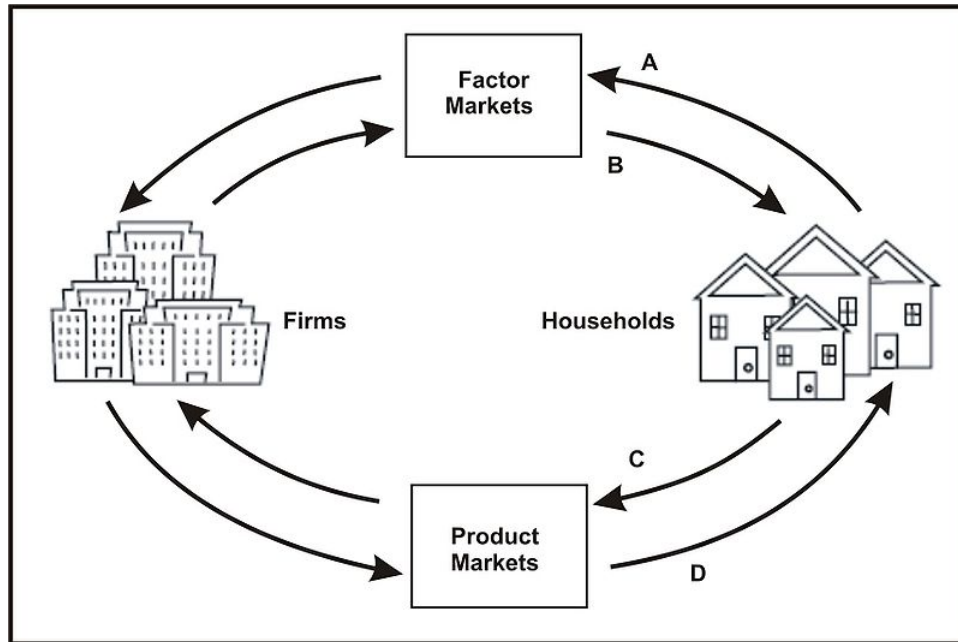
The following questions are taken from Soper, John C. and William B. Walstad. 1987. *Test of Economic Literacy* (2nd edition). NY: Joint Council on Economic Education.

- What is meant by the statement that every economic system faces scarcity?
 - There are times when some products can be purchased only at high prices.
 - Poor nations face scarcity, but rich nations have overcome this problem.
 - There are never enough productive resources to satisfy all human wants.**
 - All economies have depressions during which scarcities exist.
- The demand for a factor of production depends mainly on:
 - the supply of the factor of production
 - the demand for other factors of production
 - the supply of the products which it helps produce
 - the demand for the products which it helps produce**

3.1. RUNNING IN PLACE

3. Most of the revenue that American business receives by selling products or services is paid as:
 - a. **wages and salaries**
 - b. rent and interest
 - c. profits
 - d. taxes
4. The total output of the economy is bought by which of these groups of spenders?
 - a. farmers, laborers, and households
 - b. corporations, investors, and households
 - c. **consumers, businesses, and governments**
 - d. investors, speculators, and manufacturers
5. When goods that people want are in short supply, market economies ration the available goods by _____ and command economies ration them by _____:
 - a. “first come, first served”; government orders
 - b. adjusting prices; adjusting prices
 - c. **adjusting prices; making people wait in lines**
 - d. making people wait in lines; government orders
6. Which type of economic system most accurately describes the U.S. economy?
 - a. a pure market economy
 - b. a centrally directed economy
 - c. **a mixed economy, primarily dependent on the market system**
 - d. an economic system equally divided among traditional, command, and market systems
7. What do capitalistic economies depend upon for the allocation of resources and finished products?
 - a. central agencies
 - b. **the price system**
 - c. tradition
 - d. state and local governments
8. Which of the following must exist in order for a market economy to work?
 - a. People must follow their self-interest.
 - b. People must be motivated to make a profit.
 - c. People must be free to buy and sell as they choose.
 - d. **all of the above**
9. Why are butchers motivated to produce hamburger in a market economy?
 - a. because consumers like hamburger
 - b. because butchers have always produced hamburger
 - c. **because butchers can make profits by selling hamburger**
 - d. because government regulations require a certain amount of hamburger to be made
10. Why are goods and services produced in a market economy?
 - a. because people need goods and services
 - b. because people have unlimited wants for goods and services
 - c. **because people want to make profits for themselves**
 - d. because of tradition and institutions
11. Which of the following is an example of a good or service usually sold in a factor market?
 - a. **the services of a corporate lawyer**
 - b. the services of a roofer hired to fix the roof of your house
 - c. the services of a personal financial planner
 - d. the services of a hairstylist

12. Which of the following is sold in the product market?
- capital
 - labor
 - consumer goods**
 - land
13. The purchase of electricity:
- is always considered a purchase in factor markets
 - is always considered a purchase in product markets
 - sometimes could be considered a purchase in factor markets and sometimes could be considered a purchase in the product markets**
 - none of the above
14. The households in a market economy buy and sell in which markets?
- They buy in factor markets and sell in product markets.
 - They buy and sell in factor markets.
 - They sell in factor markets and buy in product markets.**
 - none of the above
15. Which is a *true* statement?
- The motivating force in a market economy always comes from the factor market.
 - Finished goods are sold to consumers in factor markets.
 - It is possible that the same good could be sold in either a factor market or a product market.**
 - Capital is sold in product markets.
16. A market in which resources and unfinished products are sold is called a:
- product market
 - factor market**
 - goods and services market
 - wholesale market
17. Industrial robots used to make automobiles are:
- sold in factor markets
 - owned by the “household” sector in market economies
 - a form of capital investment that requires interest payments for their use
 - all of the above**
18. Which of the following is a *true* statement?
- Businesses buy their inputs and sell their finished goods in product markets.
 - Businesses buy their inputs and sell their finished goods in factor markets.
 - Businesses buy their inputs in product markets and sell their finished goods in factor markets.
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About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High

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School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

John R. Mergendoller, Ph.D. Executive Director

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CHAPTER 4

The Invisible Hand

CHAPTER OUTLINE

4.1 THE INVISIBLE HAND



4.1 The Invisible Hand

Unit Overview

Time Required

5-6 hours of class time

Project Scenario

In a market economy, market forces set a price at which consumers are willing and able to purchase all the goods they want and producers are able to sell all they want. When a government sets a price below the market-determined price (i.e., sets a price ceiling), shortages occur and create nonprice distributional mechanisms such as black markets and waiting in queues. To explore how benefits and costs arise with all methods of allocating goods and services, students are presented with the following problem-solving scenario in this project:

U.S. Department of Energy Secretary Les Singer asks his policy group for help in planning how to implement legislation on gasoline price controls that was passed by Congress. He asks the policy group to start the process by trying to decide which consumers should be given high, medium, or low priority when gasoline is allocated. The group listens to messages from consumers who are concerned that shortages may occur with price controls and explain why they need gasoline. The situation soon is complicated when a critical Op-Ed piece appears in a petroleum industry newsletter and reporters start asking questions about possible negative effects of price controls. Secretary Singer, realizing he doesn't know enough about economics to respond to these concerns, asks his policy group to write a memo to him explaining why price controls might cause problems in a free market system. Finally, he asks the policy group to write an Op-Ed piece announcing the Energy Department's plan for implementing price controls.

Concepts to be Learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- **Black Market**
- **Demand**
- **Equilibrium Price**
- **Equilibrium Quantity**
- **Market**
- **Market Economy**
- **Nonprice Rationing**
- **Opportunity Cost**
- **Price**
- **Price Ceiling**
- **Price Control**
- **Scarcity**
- **Shortage**
- **Supply**
- **Tradeoff**
- **Unfettered Market**

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- **Command Economy**
- **Price Floor**
- **Surplus**

Placement in Curriculum

The Invisible Hand is designed to be the second *Project Based Economics* unit students complete. This unit teaches students about price as an equilibrating mechanism in free markets, and about the consequences of setting price below market level. Prior to undertaking this project, students should be familiar with the concepts learned in **Running in Place** about how a market economy relies on price to coordinate resources.

Sequence and Key Content of PBE Units

Essential Units:

- a. **Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- b. **The Invisible Hand** – free markets and supply incentives
- c. **Monopoly’s Might** – competitive markets and supply/demand forces within them
- d. **The Greater Good** – comparative advantage and free trade
- e. **The President’s Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)

NCEE Content Standards Addressed

The Invisible Hand addresses the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standard.

TABLE 4.1:

Standard #	Economic Concept
1	Scarcity
2	Opportunity Cost
3	Market Systems (allocation of goods and services)
4	Economic Incentives
7	Market Economies
8	Supply and Demand

The Invisible Hand can also be used to teach the following standards:

TABLE 4.2:

Standard #	Economic Concept
5	Free Trade and Voluntary Exchange
9	Effects of Competition

Project Based Learning and Project Based Teaching

Definition of PBL

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

Components of *Project Based Economics* Units

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”

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- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The **Driving Question** is written in a way that focuses students on the exact problem they need to resolve. The Driving Question is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class' unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are *not* economic terms — may also be defined on the spot, if necessary for understanding.

NOTE: The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CD-ROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct

students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity.

In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- **Notes to the Teacher:** At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
 - Arrange for peers to check each others’ understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

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Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer's if they have swapped and read each other's logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
 - Talking with certain students or groups to address their misconceptions and misunderstandings
 - Giving additional textbook reading assignments, and/or directing students to online resources and explanations
 - Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Maximizing the Effectiveness of Project Based Teaching

- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit

scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE*

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unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* The solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.

- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching The Invisible Hand

Sequence of the Unit

Like the other BIE *Project Based Economics* units, students complete **The Invisible Hand** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school Economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible — at least during the first several times **The Invisible Hand** is taught. Each instructional activity is discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

Launching the Project

1. Students listen to the **voice mail from Secretary Singer**, read the transcript, and discuss it as a whole class.

Framing the Inquiry

2. Students develop the **initial “know” list** with the teacher (whole-class discussion).
3. Students develop the **initial Driving Question** with the teacher (whole-class discussion).

- Students develop the **initial “need to know”** list with the teacher (whole-class discussion).

Problem Solving and Learning Activities

- Teacher provides (optional) **clarifying lesson # 1** on *market economies*.
- Students individually write **first Project Log entry**.
- Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
- Students listen to and discuss the **voice mail messages** forwarded from Secretary Singer (whole-class discussion).
- Students **revise the know/need to know list** with the teacher (whole-class discussion).
- Students use worksheet to **allocate points** to decide who should get gasoline (in pairs/threes) and discuss results as a whole class.
- Teacher provides **clarifying lesson # 2** on *black markets*.
- Students individually write **second Project Log entry**
- Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
- Students read the **memo and Op-Ed piece** and discuss it as a whole class.
- Students **revise the Driving Question** with the teacher (whole-class discussion).
- Students **revise the know/need to know list** with the teacher (whole-class discussion).
- Teacher provides **clarifying lesson # 3** on *demand and supply*.
- Students individually write **third Project Log entry**.
- Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
- Students write **memo on markets**, in small groups, in pairs, or individually.
- Teacher uses supplied rubric to **assess memos** on markets.
- Students listen to **final voice mail** from Secretary Singer and discuss it as a whole class.
- Students **finalize the Driving Question** with the teacher (whole-class discussion).
- Students **revise the know/need to know list** with the teacher (whole-class discussion).
- Teacher provides **clarifying lesson # 4** on *price controls and market prices*
- Students individually write **fourth Project Log entry**.
- Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
- Teacher **shares supplied rubric with students** to guide their work.
- Students review the **final know/need to know list** with the teacher (whole-class discussion).

Presentation, Assessment, and Debrief

- Students **discuss policy on price controls** in small groups.
- Students **write Op-Ed pieces** in small groups, pairs, or individually.
- Students **report on and compare Op-Ed pieces** (whole-class discussion).
- Teacher uses supplied rubric to **assess Op-Ed pieces**.
- Teacher conducts a **debrief to clarify and consolidate** students’ understanding of key economic concepts (as necessary).
- Teacher manages **student reflection** on the 21st century skills practiced, and the process of learning in PBL.
- Teacher uses supplied **multiple-choice test** to assess individual students’ knowledge of key economic concepts.
- Teacher makes **notes on adjustments to the unit** to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

- Teacher prepares for successful project implementation.

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There are a number of issues that must be considered before embarking on a project with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance (textbooks, articles, websites, etc.)?
- Do all students have the skills they need to tackle the project — including basic literacy skills as well as the ability to work in teams, make presentations, and conduct research? If not, is it necessary to pre-teach some of these skills, make sure students who need it have adequate support, or deal with these challenges in other ways?
- How will student groups be formed? (*See comments in Section II*)
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the library/media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/mini-lecture materials are ready — or at least underway.

Finally, **decide if the culminating product will be done as a small group, in pairs, or individually.** This will affect how you present the task to students, use time, and assess their learning. Students are asked to write an Op-Ed piece — a relatively short persuasive essay. Although the scenario places students in the role of members of a Policy Group, you may ask them to discuss it first, then write in pairs or individually if you wish.

IMPORTANT NOTE ABOUT AUDIO/VISUAL MATERIALS: This unit features voice mail messages as part of the scenario. You may order a CD/DVD containing this recording at www.bie.org, or download it as an audio file. As an acceptable alternative, you and/or students may simply do a “dramatic reading” of the voice mail messages using the transcript provided in Section IV, *Student Materials*.

Launching the Project

1. **Students listen to the voice mail from Les Singer and/or read the transcript, and discuss it as a whole class.**

The voice mail message is two minutes long and contains several important details. In order to more carefully analyze this message, students should also follow along with the transcript. As an alternative to playing the audio recording, you or students may do a “dramatic reading” of the transcript.

An audio recording of the voice mail messages may be ordered or downloaded at www.bie.org.

A transcript of the voice mail from Secretary Singer may be found in Section IV, *Student Materials*.

The transcript could be projected so it can be read by the whole class. Alternatively, copies of the transcript could be duplicated and given to students.

Potential Hurdle: Because this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of Voice Mail: The two-minute message identifies the students’ role, tells them that price controls on gasoline have just been legislated, and requests that they rank various groups in American society according to how important it is that they receive gasoline. The message seeds the idea that setting the price of gasoline may not be easy because the controls could result in shortages. It promises students two more resources: a sampling of phone calls from consumer groups wanting gasoline, and a worksheet to help prioritize groups.

Economics Content Note: The voice mail message contains a number of economic terms, such as distributional concerns, price control, price ceiling, and so on. This is intentional. It is assumed that students will either not understand these terms or have misconceptions regarding their meanings. **Do not**, at this point, explain to students

the meaning of these terms. Tell students they should put these terms on the list of what they “need to know” to solve the problem. Figuring out the meaning of economic terms is something students should, as much as possible, do for themselves (with the teacher’s monitoring and guidance) once they begin working to solve the problem.

Framing the Inquiry

2. Students develop the initial “know” list with the teacher (whole-class discussion).

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Know List

What do we know?

- Congress passed a bill on gasoline price controls
- We are a policy group and we work for the Dept. of Energy
- Bill is head of the Policy Group and is new to DOE
- Bill worked with the Energy Committee in Congress and helped get price control legislation passed
- Les Singer heads DOE and knows nothing about gasoline prices
- DOE has to set the price of gas
- DOE also has to make sure high-priority users get all the gasoline they need
- We’re going to get a worksheet to help us rank groups of consumers
- We can add groups to the list
- Price affects who gets gas
- People are worried that price controls will cause shortages of gas
- We will get phone call messages
- Les is giving a speech in Guadalajara and wishes he’d taken Spanish

3. Students develop the initial Driving Question with the teacher (whole-class discussion).

After students have discussed the voice mail message from Les Singer, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion.

A Driving Question is a succinct declaration of the general problem students are to solve. In PBE, it takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial Driving Question may look something like:

How can we, as a **policy group at DOE**, prioritize **the users of gasoline** so that **we can set the price of gasoline to make sure high-priority groups get all the gasoline they need?**

At this point, it is OK if the Driving Question is somewhat ill-defined. It is not necessary that the Driving Question contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the scenario unfold.

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4. Students develop the initial need to know list with the teacher (whole-class discussion).

The next step in the problem-solving process is to coach students to identify information they need to know in order to answer the Driving Question. Again, guiding students to pay close attention to all parts of the Entry Document, create a “What Do We Need to Know?” list. If students are missing a key piece of information about the scenario, the economic content, or their tasks, ask questions to elicit items for the list. *This is critical because everything students are taught in the unit must spring from this list.*

At this point in the problem-solving process, students will probably list things that they actually do not need to know. Allow students to do so. The class will return to the know/need to know list again later, having learned more about what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of Project Based Learning is to distinguish what information is and is not necessary to successfully answer the Driving Question. As much as possible, encourage students to identify irrelevant information on their own.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Need to Know List

What do we need to know?

- Why did gasoline prices need to be controlled?
- Why will there be shortages with price controls?
- What is the price of gas?
- What does allocate mean?
- What is Bill’s last name?
- Who is the President?
- When will Les get back?
- What is a bureaucracy?
- What is a policy group?
- How do we rank groups?
- Have there been past shortages?
- Are there shortages now?
- How long will price controls be in effect?
- How much are distributors being charged for gas?
- Is this the holiday season or summer?
- What do people say in the phone calls?
- Why are gasoline prices so high?
- What groups want gasoline?
- Why do we have only 25 points to use?
- Why do we have to decide who gets gas?

Potential Hurdle: Students may want to know why they must have price controls, or they may want to enact policies to get more gasoline (e.g., increase drilling or put pressure on oil-producing countries to increase the gasoline supply). Remind them that they are government bureaucrats and their assignment is not to set policy but to implement policy that has been set. This hurdle offers a good opportunity to review the role of Congress in setting policy.

Problem-Solving and Learning Activities

5. Teacher provides (optional) clarifying lesson # 1 on *market economies*.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for information to include in a mini-lecture.

Economics Content Note: In this lesson emphasize the following concepts:

- How prices determined in markets answer the four economic questions
- How firms will lower prices to compete for consumers in markets and respond to higher prices with an increase in quantity supplied

6. Students individually write their first Project Log entry, an answer to the following question:

How do gasoline companies answer the fundamental economic questions when price controls are not in place?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

7. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

8. Students listen to the voice mail messages forwarded from Secretary Singer as a whole class.

The series of voice mail messages, totaling 11.5 minutes in length, are from groups and individuals hoping to be given priority in getting gasoline. As an alternative to playing the audio recording, you and students may do a “dramatic reading” of the transcript.

Introduce the voice mail messages by reminding students that Secretary Singer referred to it in his message, and asked his policy group to listen to these people’s concerns before giving high, medium, and low priority to groups of gasoline users. If you wish, have students read along on the transcript with the voice mails as they are being played.

A transcript of the voice mail messages may be found in Section IV, *Student Materials*.

Each of the people in the voice mails represents a particular need for gasoline. Students should see that most (if not all) of the needs are legitimate, and as a result, it will be difficult to make a decision about who should get gasoline. Students should also see that individuals are making the calls because they are fearful that shortages will occur when price ceilings are put in place.

To ensure that students fully understand the equity concerns that have led to price controls and the shortages that will occur with price ceilings, they should listen carefully to each person’s needs. Students should be prompted to listen for information that answers the question, “Why do they need gasoline?” Teachers could pause between each message to facilitate understanding of each individual’s agenda in calling Secretary Singer.

Students should hear that:

- ***Jimmy Hoffman*** wants special assurance that truckers will be able to get gasoline. He suggests that truckers’ services are essential to facilitating commerce. He also notes that trucking companies were losing money when gasoline prices were high.
- ***Joe Gannon*** is concerned that crime and fire damage will be more prevalent, and that lives and property will be lost unless public safety officers get the gasoline they need.
- ***Eve Tamar*** wants gasoline so she can take her children to after-school activities, which make them more well-rounded people.
- ***Maddy Washington*** likes price controls because she gets cheaper gasoline and does not mind standing in line. (Her opportunity cost of standing in line is low.)
- ***Arnold Ziffel*** makes the plea for farmers to have gasoline so crops can be grown and shipped to markets.
- ***Christina Lopez*** commends price controls as being fair, but wants to make sure that low-income workers will get gasoline. She notes that they had difficulty buying gasoline when the price was high. She also believes that public transit is unreliable.

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- **Fiori Packart** introduces the notion of a black market that will arise with price controls on gasoline, and she wants to make sure that businesses can get the petroleum products they need to continue production. Without gasoline, she points out, businesses will cut back production, which will mean layoffs.
- **Henry Edsel** wants price controls so the people not getting gasoline will buy his hybrid cars.
- **Helen Moses** wants senior citizens to get gasoline so they can drive to the doctor’s office.
- **Ted Tilton** makes the plea for fuel for the large airlines so transport and business travel can continue.
- **Victor Tran** wants to reduce overall gasoline consumption by giving gasoline to public transit and not to private citizens.
- **Imelda Guzman** commutes many miles to work and needs to have gasoline so she can keep her house and job. She says she had trouble paying for gasoline when the price was high.
- **Jamal Hayward** needs gasoline so he can get to work and school.

Economics Content Note: The voice mail messages should heighten student interest in price controls. They should bring up questions such as “Why are people worried about price controls?” In class discussions, keep students focused on the distributional aspects of the messages. Make sure they understand the problems that exist for some people or groups when gasoline prices are relatively high (without price ceilings) — and also the problems that will exist for others if they cannot get gasoline when prices are low. Many of the potential problems with and consequences from price controls are seeded in the voice mails. For example, Fiori Packart suggests the idea of a black market for gasoline, which should be highlighted as a need to know. Henry Edsel plants the idea that there may be secondary consequences (and tradeoffs!) from allocating gasoline by means other than price. If people using hybrid cars get gasoline, for instance, the environment will be improved, and the car producers will make lots of money.

9. Students revise the know/need to know list with the teacher (whole-class discussion)

Revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students should have some new items for the need to know list.

The revised know/need to know list might include the following new items:

Sample Items for Revised Know/Need to Know List

What do we know?

- (previously listed items)
- People are afraid they will not be able to get gasoline
- Some people like price controls
- Gasoline prices were \$5 a gallon
- Maddy thinks the new policy will set gasoline prices at \$1.50 a gallon
- Some groups need gasoline for work
- Some groups need gasoline for fun
- Businesses need gasoline to keep running
- Gasoline is important to lots of people and to the U.S. economy

What do we need to know?

- (previously listed items)
- What is a black market?
- How much gasoline do these people need?
- Who else can we add to the list?

10. Students use worksheet to allocate points to decide who should get gasoline (in pairs/threes) and discuss results as a whole class.

After students understand the needs of different consumer groups for gasoline and recognize the problems created by shortages, they should be given the worksheet from Les Singer. The worksheet is designed to show students how difficult it can be to make decisions about who gets gasoline when there is not enough to satisfy everyone. Students should use the 25 points on the worksheet to show who they think should have priority in getting gasoline. ***Students may add groups that might need gasoline to the list, but they cannot remove groups that have made phone calls.*** Of course, they can always give a group a zero, indicating that it should have no gasoline.

Allocating the 25 points among groups is best done by having students work in pairs. Suggest that they use pencil, since they will need to erase as they try different point allocations. Or you could provide two copies of the worksheet — one to work on and one to record final decisions.

Potential Hurdle: Students might complain that 25 points are not enough to allocate because some people will not get gasoline. However, ***do not*** increase the amount of available points. The exercise was designed to show students how difficult it can be to allocate gasoline when price is below equilibrium (i.e., price is not determining “who gets the goods”). The limited points reflect scarcity and for students to understand the problems of allocating resources under scarcity, they must not exceed the 25 points allocation. Each group thinks it has a real need for gasoline, and it is difficult to make decisions about who should get it. The 25 points for allocation will emphasize this important economic reality. Students also may want fuller descriptions of what each group does — “Does the parent also work? What products do the businesses make? How much gasoline do they actually use?” Ask them to focus on the *activities* identified in the voice mails and award priority points on that basis. Remind them that most of the time people have to make decisions without all information.

After each pair has allocated their points, the entire class can discuss any problems they encountered in doing the exercise. Students should realize that the challenges they faced in assigning points are the same ones that come up when allocating gasoline with a price ceiling present.

The point allocation exercise can be used to generate discussion about who should get gasoline. Discussion can be stimulated with such questions as, “How did you rank the group? Who is on top and who is on the bottom? Do you think it is fair that not everyone can get gasoline? Who do you think would be on the top and bottom if price were used to allocate gasoline? Is it fairer if price determines who gets gasoline? What happens to the economy if the people with a zero don’t get gasoline?”

Economics Content Note: The discussion on who should get gasoline should be used to remind students that this type of decision making is not necessary when markets determine price. Markets need no coordination because voluntary exchange — individuals and firms trading for what they want — leads to market efficient pricing. You should emphasize that the reason that price controls are implemented is because some people think markets are not fair. These feelings frequently arise when prices for goods like gasoline or housing are high and some people are priced out of the market. You should make sure that students see that some people that need gasoline do not get it with nonprice allocations, which is what they did when they allocated points. Scarcity means that not everyone can get the gasoline they want, and either markets or the government can be used to determine who does get it. Should students add entities to the list (e.g., military), the ranking becomes even more difficult. You can use these additional entities to illustrate how much more complicated allocating gasoline is when all members of society are considered potential consumers.

11. Teacher provides clarifying lesson #2 on black markets.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See “Economics Review” in Section V, *Teacher Materials* for background information for this lesson.

Economics Content Note: In this lesson emphasize the following concepts:

- Some ways in which goods can be allocated without using price
- How black markets operate
- Why black market arise with price controls

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- How black markets increase the opportunity cost of getting the good

12. **Students write their second Project Log entry, an answer to the following questions:**

Why do price ceilings cause shortages? What is a black market and why might it alleviate shortages?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

13. **Teacher reviews individual Project Log entries to assess understanding of economic concepts.**

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: The Project Log entries should be reviewed to determine if students understand that some people who don’t get gasoline under the point allocation scheme will bid up its price in an illegal market. This illegal market — called a black market — will reduce some of the allocation pressures on the price controlled market. Some people who got gasoline using a point scheme would be happier if they sold gasoline at a higher price (i.e., made a profit) to people who could not get the gasoline. By trading in the black market both parties are made better off — or they wouldn’t have entered the black market.

14. **Students read the memo and Op-Ed piece and discuss it as a whole class.**

The memo and Op-Ed piece are designed to increase and solidify students’ knowledge of free markets by examining the production side of the market. This memo asks students to write a detailed memo, immediately, explaining how free markets work and why price ceilings produce shortages.

Potential Hurdle: Some students may find it difficult to synthesize and internalize all of the information contained in the memo and Op-Ed piece if they are distributed together. If you think this might be the case, you can distribute and discuss the documents separately.

Economics Content Note: The Op-Ed piece seeds the idea that price controls impede free market operations. Its focal point is a quote from Adam Smith’s *The Wealth of Nations*. This famous quote — which introduces the phrase, the “invisible hand”— succinctly summarizes how markets operate when freed of government interference. In essence, the motivation provided by self interest — customers pursuing what they want, laborers working for pay, or firms pursuing profit — is what drives markets. Price serves as the signal to move resources toward areas of efficiency.

15. **Students revise the Driving Question with the teacher (whole-class discussion).**

Students should revise their Driving Question after reading the memo from Les Singer. Their revised Driving Question may look like:

How can we, as a **policy group**, write a detailed memo **explaining why the market sets price efficiently and price ceilings might produce shortages**, so that **Les Singer can answer the reporters’ questions**?

16. **Students revise the know/need to know list with the teacher (whole-class discussion).**

Revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check . In addition, students should have some new items for the need to know list.

The revised know/need to know list might include the following new items:

Sample Items for Revised Know/Need to Know List

What do we know?

- (previously listed items)
- Price ceilings create shortages
- Reporters are challenging Mr. Singer and he needs help
- Oil producers don't like price controls
- Drilling for oil is expensive
- There are different ways to drill for oil
- If gasoline prices are set too low, producers will not pump oil
- Now we have to write but can't use graphs

What do we need to know?

- (previously listed items)
- What is a free market?
- Who is Adam Smith?
- What is the price of gasoline now?
- What does the long quote mean?
- Why would there be less gasoline if the price was lowered?
- How would the laws of supply and demand be destroyed by price controls?
- Why doesn't Les know economics?

Potential Hurdle: By now, students might be exasperated by the fact that they don't know the price of gasoline. You might remind them that simply knowing the price of gasoline is not good enough. If the price of gasoline is to have any meaning at all, it has to be in relative terms. What if the price of gasoline was \$10 a gallon, but everyone earned \$100,000 a year? Or the price of public transportation was \$50 a ride? The relevant dimension for policymakers is that people *believe* the price of gasoline to be too high.

17. Teacher provides clarifying lesson #3 on demand and supply

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for information to include in a mini-lecture.

Economics Content Note: In this lesson emphasize the following concepts:

- The law of demand and how individuals respond to prices
- Factors that determine demand
- The law of supply and how firms respond to prices
- Factors that determine supply
- Equilibrium price
- Shortages and price controls

18. Students individually write third Project Log entry, an answer to the following question:

Why would price ceilings “prevent the laws of supply and demand from operating”?

19. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: The Project Log entries should be reviewed to determine if students understand how markets operate and why price ceilings set below equilibrium price would produce shortages in the market. They

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should see that with price ceilings more individuals want gasoline (price is lower) and fewer firms want to produce it (can't cover costs). Students should also see that some people — those that get the gasoline at the lower price — benefit greatly from price controls.

20. Students write memo on markets individually.

A sample memo and rubric may be found in “Assessment Tools” in Section V, *Teacher Materials*.

If you think students need it, show them the rubric before they write. The sample memo and rubric should be used to assess the students' memos. The sample memo can also be distributed to the class after the memos are graded to show an example of high-quality work or be used as a basis for follow-up discussion.

Economics Content Note: It is essential for students to understand the basic principles of free market operation, which is the core goal of this unit. Without a solid grounding in these principles, they will not fully comprehend the ramifications — both good and bad — of price controls. Because many students can replicate graphs depicting market operations yet not understand the underlying forces, the assignment to write a memo using “plain English” will force them to grapple with the intuitive explanation of unfettered markets.

21. Teacher uses supplied rubric to assess memos on markets.

A sample memo on markets and the rubric for it may be found in “Assessment Tools” in Section V, *Teacher Materials*.

As you review students' memos explaining free market operations and price controls, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. If many students appear to need help understanding something, consider doing a quick whole-class lesson, mini-lecture or discussion. If only a few need help, a side conversation with individuals or small groups might be sufficient.

Economics Content Note: The material contained in clarifying lesson #3 may be challenging for students. If the memos that students write indicate that they do not understand the functioning of markets, reintroduce the material from that lesson. Because this material lies at the heart of economics, reinforcement for clarity or increased understanding might be essential.

22. Students listen to final voice mail from Secretary Singer and discuss it as a whole class.

The CD accompanying this unit contains this voice mail message which is 2 : 15 minutes in length. In order to more carefully analyze this message, students should also read a transcript.

A transcript of the voice mail from Secretary Singer may be found in Section IV, *Student Materials*.

Synopsis of final voice mail message: Secretary Singer thanks his Policy Group for their memo on markets, noting how price controls may seem fair, but free markets are efficient. He tells students that they must quickly decide on a gasoline pricing policy and persuade the public of the wisdom of their policy through an Op-Ed piece to appear in major newspapers and wire services. The message explicitly tells the Policy Group that they can set price above or below market equilibrium. In their Op-Ed piece they need to justify their decision, outline a plan for allocating gasoline, and identify winners and losers. Finally, Les mentions that the Op-Ed piece is being sent to the President's Council of Economic Advisors for approval.

23. Students finalize the Driving Question with the teacher (whole-class discussion).

Students should revise their Driving Question after listening to the final message from Les Singer. This is going to be the final Driving Question, or at least very close to it, so be sure students clearly understand their task. The final Driving Question should look something like:

How can we, as **the Policy Group at the DOE**, write an Op-Ed piece **explaining our policy on gasoline price controls**, so that **the public will support our decision**?

24. **Students revise the know/need to know list with the teacher (whole-class discussion).**

Revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students should have some new items for the need to know list.

The revised know/need to know list might include the following new items:

Sample Items for Revised Know/Need to Know List

What do we know?

- *(previously listed items)*
- We need to write an Op-Ed piece announcing our policy on price controls
- We need to persuade the public that we’ve made the right decision
- We need to decide if we should set the price ceiling below or above market level
- A price ceiling set above equilibrium lets the market determine price
- We need to decide how to determine who gets gasoline
- Our Op-Ed piece needs to identify winners and losers in our policy
- Les needs our Op-Ed piece in two days
- The President knows Les doesn’t know economics, so the Council of Economic Advisors has to approve our policy
- Les is threatening to “take us down with him”

What do we need to know?

- *(previously listed items)*
- What is an Op-Ed piece and how do we write one?
- How long does it have to be?
- What is the Council of Economic Advisors?
- What is a wire service?
- What does the “tradeoff between equity and efficiency” mean?

25. **Teacher provides clarifying lesson #4 on price controls and market prices.**

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: In this lesson emphasize the following concepts:

- The advantages (benefits) of letting market-determined prices allocate gasoline
- The disadvantages (costs) of letting market-determined prices allocate gasoline
- The advantages (benefits) of using price ceilings and nonprice means to allocate gasoline
- The disadvantages (costs) of using price ceilings and nonprice means to allocate gasoline

26. **Students individually write fourth Project Log entry, an answer to the following questions:**

What are some of the advantages of setting prices in competitive markets?

What are some of the advantages of using price controls?

27. **Teacher reviews individual Project Log entries to assess understanding of economic concepts.**

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For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: The Project Log should be reviewed to determine if students understand the costs and benefits of letting the market-determined price allocate gasoline and the costs and benefits of using nonprice allocating mechanisms and price controls. Every policy alternative has benefits and costs, so society might be better off with the policy alternative in which benefits exceed costs by the greatest amount.

28. Teacher shares supplied rubric with students to guide their work.

The rubric for the Op-Ed piece may be found in “Assessment Tools” in Section V, *Teacher Materials*.

Give a copy of the rubric to each group, pair, or to each student, and/or display it on an overhead or computer projector so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their writing skills, while important, are given less weight on the rubric. If you are altering the rubric’s point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

29. Students review the final know/need to know list with the teacher (whole-class discussion).

Conduct a final whole-class discussion of the items on the know/need to know list. The purpose of this discussion is to identify any final questions or issues that still need to be addressed. Also note which items on both lists are, in fact, not necessary for solving the problem — even though knowing more might make for an even better solution, if time allowed.

Presentation, Assessment, and Debrief

30. Students discuss policy on price controls in small groups.

As noted above in Step (0), *Pre-Project Planning*, you should have decided if students will write the Op-Ed piece in small groups or in pairs. Whichever method you choose, form students into policy groups so they can discuss the potential pros and cons of price controls together before they write. If groups are formed with some students favoring price controls and some favoring market-set prices, this will encourage debate and discussion and help stimulate thinking.

Remind students that their Op-Ed piece will be given to the Council of Economic Advisors (CEA) for review, so the focus must be on the economic aspects of their policy. If you prefer to have students make a presentation as an exit from the problem, make it a group task and have them present their Op-Ed piece to the CEA. Make sure they focus on the economics of their policy and not on visuals for their presentation.

Economics Content Note: Students may have trouble with the ambiguity in their assignment to set price above or below equilibrium. Usually they can see that setting a price below equilibrium results in shortages and gasoline rationing, but they may have difficulty seeing that a price ceiling set above equilibrium is another way of saying that the market should set the price of gasoline. You may be able to illustrate the ineffectiveness of setting the price ceiling above equilibrium with an example. Ask the students what would happen if the school told soda vendors that they could not sell soda for more than \$25.00 a can. Students will readily see that the price of soda sold at their school would not change. You can then move the example to gasoline. (What would happen if gasoline stations were told they could not sell gasoline for more than \$35.00 a gallon?). After a short explanation reminding students that both soda and gasoline prices are currently set in the market and that they would still be set in the market with a price ceiling of \$25.00, they will recognize that setting a price ceiling above equilibrium is a way of saying, “Let the market set price.”

31. Students write Op-Ed pieces in small groups, in pairs, or individually.

Once students clearly understand what they need to do, allow enough time for them to write well-crafted Op-Ed pieces. It may take students a whole class period to write, or a night or two of homework. Remind students that they have the final memo from Les Singer and the rubric to guide them, as well as the model of an Op-Ed piece which they saw earlier in the unit, written by J.R. Ewing in the “Oil Express.”

Economics Content Note: It doesn’t matter whether students favor or oppose price controls. What is important is that they understand how both unfettered markets and markets with price controls operate, and that they can assess the advantages and disadvantages of each.

32. Students report on and compare Op-Ed pieces (whole-class discussion).

If you wish to conclude the unit with a more formal oral presentation, see the comments below under *Teaching Tips*.

Depending on whether students wrote as a small group, in pairs, or individually there are several ways you could have students share their solutions to the problem. If time allows, each group could be asked to report on the following:

- Where did you decide to set the price of gasoline and why?
- How are you determining who gets gasoline?
- Who are the winners and losers under your policy?

To save time, or if students wrote in pairs or individually, you could conduct an informal poll of students’ responses to each of the above questions and keep track on the board or overhead projector.

Lead a discussion of the reasonableness of various solutions, and the economic reasoning used to justify them.

Economics Content Note: The Op-Ed piece should outline a policy for setting the price of gasoline and describe plans for its allocation. It must justify any negative consequences or present policies for mitigating negative consequences. For example, students could justify the use of price ceilings and ration the quantity of gasoline each person receives through coupons, or they could justify the use of market-set pricing and provide vouchers to individuals who cannot afford to purchase gasoline. In all cases, they must discuss the economic ramifications of their policy by identifying winners and losers.

33. Teacher uses supplied rubric to assess Op-Ed pieces.

The rubric for the Op-Ed piece may be found in Section V, *Teacher Materials*, in “Assessment Tools.”

As you read students’ Op-Ed pieces, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

34. Teacher conducts a debrief to clarify and consolidate students’ understanding of key economic concepts (as necessary).

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the economics content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students’ solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

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The debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations. Although future *Project Based Economics* units will return to some of the same economic ideas and concepts, spend some time after students' presentations clarifying any concepts that are still unclear.

Concepts addressed by this unit include:

- Supply
- Scarcity and opportunity costs
- Demand
- (Equilibrium) price
- Competition in markets
- Nonprice rationing
- Price ceiling and shortages

Economics Content Note: Students must see how competitive markets and their equilibrium price efficiently allocate gasoline. It is consumers competing for gasoline and firms competing for consumers of gasoline that result in this efficiency. If the price of gasoline is “too high”, it’s because consumers bid it that high in their desire for gasoline or firms can’t lower the price any further in their desire for consumers because their cost of producing it is that high. Price controls set the price outside the market, usually because the market-determined price is considered unfair. Because prices are not allowed to change under price controls, consumers cannot bid up the price of gasoline to get more of it and firms cannot produce more of it because of increased cost. A nonprice rationing scheme must be developed to determine who gets gasoline. This content is central to the unit and must be demonstrated in the Op-Ed piece. Teachers should review this content should the Op-Ed pieces reveal that it is not mastered.

35. Teacher manages student reflection on the 21st century skills practiced, and the process of learning in PBL.

Students should have a chance to discuss the process of learning in PBL, and to reflect on the 21st century skills of critical thinking, collaboration, and presentation that they used in the project. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible “right answers” to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

36. Teacher uses supplied multiple-choice test to assess individual students’ knowledge of key economic concepts.

The multiple-choice test for this unit may be found in Section V, *Teacher Materials*, in “Assessment Tools.”

37. Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.

Teachers inevitably recognize how to make **The Invisible Hand** more effective after they have taught it. We encourage you to note these thoughts quickly, so you can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school Economics teachers. We include their advice about avoiding potential problems in **The Invisible Hand** below.

- Avoid focusing the unit on the positives of nonprice rationing. If the emphasis changes to the negatives of market economies, curriculum standards targeted for this unit will not be met. *Students must learn that market determined prices are efficient and this lesson will be lost by changing the unit's focus.* Please see other lessons to address the topic of government allocation of goods and services in light of market inequities or failures.

Extensions To The Unit

- Consider the following economics content-related extensions:
 - Command economies could be examined by contrasting them with pricing and allocation in market economies.
 - The coordination wrought by the “invisible hand” can be linked back to circular flow (in the **Running in Place PBE** unit) to illustrate how unfettered markets lead to an economic system.
 - The discussion of price controls can easily be expanded to include price floors and surpluses.
 - “eBay,” the online auction website, can be used as an example of market forces working to set prices.
 - Students can research economic, social, and political American history as part of their review of price controls used in the past.
 - You can initiate a discussion about production and cost, in the petroleum or other industries, by focusing on the J.R. Ewing Op-Ed piece.
- You could have students make an oral presentation before the Council of Economic Advisors, in addition to writing the Op-Ed piece. They could make the presentation as a culminating activity, or make it before writing their final draft of the Op-Ed piece, as a way to get feedback on their ideas. You as the teacher could play the role of members of the CEA, or other adults could be brought in to hear presentations — as long as they take their role seriously and are coached by you in how to play it.
- Since the Op-Ed piece students are asked to write is basically a persuasive essay, it would be easy to coordinate this task with English/Language Arts content standards — and find resources from teachers of that subject on how to write persuasively.
- If you want to use the unit to reinforce the graphical tools of demand, supply, equilibrium, price, and price ceilings, tell students that their Op-Ed piece must be accompanied by a graphical analysis at the request of the CEA. If you use this option, make sure that the students’ earlier memo showed a solid intuitive understanding of how markets work. If students do not have this understanding, use the Op-Ed piece to reinforce their understanding of market operations.

Student Materials

Transcript of Voice Mail from Les Singer

(Total running time 2 : 00 minutes)

Voice of Les Singer, Secretary, Department of Energy

Hi Bill. Les Singer here. I’m really pleased to have you on board as head of my Policy Group. I know you just finished an assignment working for Congress, spearheading the Energy Committee’s gas price control legislation—and

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several members of Congress have told me that your work was critical in getting that bill passed. While the legislation is supposed to help ease the strain of high gas prices, the Department of Energy now needs to figure out the details. I'm counting on your group in a big way. As head of the Department I know how to run a large bureaucracy, but I really don't know much about setting the price of gas. I know how important gas is to our economy, but not much else. So here's where I need your help.

The legislation says that we have to set the price of gas and make sure high-priority users get the gas they need. I'm not sure exactly how this all works, but I'm told there could be distributional concerns that come with a ceiling on the price of gas, and this sure looks likely. I'm already getting phone calls from people who are worried that a price ceiling will produce shortages and not everyone who wants gas will be able to get it.

Here's what I'm thinking. If price controls will produce gas shortages, then we might want to set prices based on who we think should get gas. Let's set the price of gas so that high-priority groups can get all the gas they want, medium-priority groups can get most of the gas they want, and low-priority groups will get any gas that is left. Of course, this means we will have to do some ranking to see who should have priority.

I'll forward a sampling of phone calls we've been getting from groups of consumers who want gas. I'll also fax over a worksheet I designed to help with the ranking. The worksheet has 25 points to allocate among groups who have expressed their concerns. If there is anyone else who you think should be included, please add them to the list. With this point scheme we'll be able to see at a glance who should get gas, and who might not get it. Let's discuss your rankings when I get back.

I'm sorry I can't be there to welcome you aboard in person, but the President needed me to give a speech in Guadalajara. Sure wish I'd taken Spanish in high school!

Transcript of Voice Mail Messages

(Total running time 11 : 25 minutes)

Les Singer, Secretary, U.S. Department of Energy

Bill. Les here. I'm forwarding the voice mails I promised your group. I guess these people heard all the scare stories during the debate over the gas price control legislation. They all seem very concerned about rationing with price controls. If they're right that price ceilings will cause gas shortages, then we need to figure out a priority ranking for who should get gas. I'll fax over the worksheet to help us decide this. Would you listen to why these folks think they should get gas, and see if you agree?

Jimmy Hoffman, President, Meadowlands Trucking

Yes, Secretary Singer. I'm Jimmy Hoffman, president of the Meadowlands Trucking Company. Truckers are really happy about having price controls on gas. We were operating at huge losses when gas topped \$5.00 a gallon. But I'm a little worried that the price ceilings my congressman talked about might cause shortages of diesel fuel. I hope you will make sure that truckers get all the fuel they need—otherwise we won't be able to move consumer goods across the country. Trucking will diminish—maybe even disappear—if we can't get gas cheaply. And, if trucks don't roll, the world won't spin.

Joe Gannon, Police Sergeant, LAPD

Hello, this is Sergeant Joe Gannon of the Los Angeles police department. I'm calling to remind you that public safety will become a critical concern when price ceilings result in gas shortages for our police cars, fire trucks, and ambulances. Cities will become unmanageable. Crime will increase if police don't have gas to patrol neighborhoods and get to crime scenes quickly. Lives and property will be lost if fire trucks can't get to a fire. And people will die if ambulances can't be driven to the hospital. It's obvious—public safety vehicles require the highest priority for gasoline.

Eve Tamar, parent

Hello Secretary Singer. I'm Eve Tamar and I've never called a Cabinet member in my life, but the thought of price controls on gas has me quite concerned. I have a son who plays sports and a daughter who does a lot of community

service. These activities make them well-rounded high school students and good citizens. I cannot tell you how important it is to have the gas to drive them around so they can continue these activities. I appeal to you, as a parent, Secretary Singer, to give parents the gas we need to drive our children to and from school and after-school activities.

Maddy Washington, teen

Hi. I'm Maddy Washington and I go to Fairmont High School and work at Bennie's Burgers after school and during the summer. I think the new policy to have gas sell for \$1.50 a gallon is wonderful. I'd love to go on road trips with my friends, but I can't afford to go until you make gas cheap. My Economics teacher tells me that lots of people are against price controls because they think they will not be able to get gas or they may have to stand in line to get it. But who cares? I think standing in line for gas is a good way to meet people. After all, we have to stand in line to get groceries, don't we?

Arnold Ziffel, farmer

Howdy Secretary Singer. This is Arnold Ziffel and I own a 500– acre farm in Minert, Missouri. I'm really worried about being able to get gas with price controls. Our tractors, combines, and balers all need gas so we can plant and harvest our crops, and our trucks need gas for hauling. If you thought people complained when food prices were high because gas cost \$5.00 a gallon, wait until you hear what happens when they can't get food because farmers can't get gas!

Christina Lopez, Director, local community-based organization

Hello, this is Christina Lopez and I run a community-based organization that provides services to the working poor. I am happy to see the price ceiling being placed on gasoline. It will allow many of my clients to afford gas to get to job interviews, buy groceries, and do all the other things that driving a car allows people to do. We finally have a fair price for gas. Now let's make a fair decision about who gets the gas, and relieve low- income people from the burden of having to rely on public transit.

Fiori Packart, Chief Executive Officer, Hew Production

Hi Les. Fiori Packart of Hew Production. Are we really getting price controls on gasoline? Amazing. I hope you realize what problems a non-price rationing system would create for business. If we can't get gas and other petroleum products we will not be able to maintain current production levels. And if we have to pay the high prices for gas that will be available in the black market, we will still have to cut back production because our costs will increase. As you know, production cutbacks will mean downsizing our workforce. Layoffs are NOT something the economy can afford right now. Remember, "The Business of America is America's Business" and corporate America must be a top priority when it comes to gasoline-related products.

Henry Edsel, hybrid car producer

Les, Henry Edsel here. Great news about the price controls. You may remember that I produce hybrid cars, so I think price controls are an excellent way to make people see the need for cars that use less gas. If you set the price of gas *real* low, there will be a *huge* shortage. Then give drivers of hybrid cars all the gas they want, and people will start buying hybrid cars! Sure, my company benefits—but so will the environment!

Helen Moses, senior citizen

Good afternoon Secretary Singer. My name is Helen Moses. I am 84 years old and remember when your grandfather was our congressman and our gas was cheap. Those were the glory days. We small town residents could easily drive to the big city to get things like medical care. Now I don't know what to think about price controls on gas. I had to cancel my last doctor's visit because I couldn't afford the gas, but my son says that I won't even be able to get gas once there are price controls. Ever since Valley Care Medical Center closed, it has been really hard for seniors out here to get to the doctor. Secretary Singer, please give senior citizens some gas.

Ted Tilton, Chief Operating Officer, Amalgamated Airlines

Les, Ted Tilton, Amalgamated Airlines. As you know, U.S. airlines are a \$110 billion industry that can be grounded in a nanosecond without gasoline. Price controls could easily destroy our ability to get the gas we need to fly our

planes. And without major airlines providing transportation, business travel will come to a halt and families will not be reunited at holidays. Ground small planes if you wish, but grounding the major airlines will stifle the country's economy.

Victor Tran, Director, Manhattan Transit Authority

Hi, this is Victor Tran at the Manhattan Transit Authority. I'd like to say, public transit brings hundreds of thousands of people to work, school, and leisure activities across the nation in a fuel-efficient way. It allows people to reduce their gas consumption and helps make the air cleaner. Public transit is a necessity for many people who cannot afford other means of transportation. Please put price-controlled allocations to good use. Give public transit agencies all the gas they want—and force people to curtail their use of private automobiles.

Imelda Guzman, long-distance commuter

Hello, my name is Imelda Guzman and I'm president of the Highland Homeowners Association in Bellingham, Washington. I strongly supported price controls to lower the price of gasoline, because I commute 85 miles a day to get to and from work. My family and I were struggling to pay our monthly bills when gasoline was \$5.00 a gallon. But of course, if I can't get gas with price controls, I'll lose my job because I can't get to work. If I can't work we'll lose our home. Workers need gas and you need to make sure we can get it.

Jamal Hayward, 23-year-old worker

Hello, I'm Jamal Hayward and I graduated from high school about five years ago. I'm currently working on my Bachelor's degree at night, and I work at the Federal Reserve Bank during the day. I like my job and I'll be able to advance in my career once I have my Bachelor's degree. I need my car to get to work and then school. Please make sure I can get gas. My career is ahead of me. Please don't take it away.

Bill and Group,

Please allocate 25 points among these consumers. More points means they should get more gas. Zero points means no gas. Feel free to add others to the list, but don't take anyone away. We can discuss when I get back. —Les

TABLE 4.3:

Group	Why They Need Gas	Points	Reason for Priority
Truckers			
Public Safety			
Parents			
Teens			
Farmers			
Low-income Workers			
Businesses			
Hybrid Car Drivers			
Senior Citizens			
Airlines			
Public Transit			
Long-distance	Com-		
muters			
Workers/Students			
Other 1:			
Other 2:			
Other 3:			
Total		25	



United States Department of Energy

Office of the Secretary

Telephone: 202.555.1212

Fax: 202.555.1213

Memorandum

To: Policy Group Office of Secretary Les Singer

From: Les Singer, Secretary, DOE

Subject: Price Control Problems?

There seems to be a lot of concern about price controls. A group of reporters stopped me today to ask about J.R.'s Op-Ed piece in the oil industry's rag. They asked me if I knew how markets operated and if DOE would intentionally set prices so low that it would cause shortages in the gasoline market. I was able to make light of their questioning with a joke, but I must be prepared immediately for answering their questions.

I need a detailed memo that explains why J.R. would say that price ceilings "prevent the laws of supply and demand from operating." I need to understand what is so efficient about letting the market set the price of gasoline and why price ceilings might produce shortages and hurt some people.

Feel free to use some of those graphs you like if you want, but I also need you to explain the effects of markets and price controls in plain English

I can't leave the building until I am armed with this information. A ctually, you can't leave either, seeing as there are six reporters sitting in our lobby. Please get the memo to me by the end of the day.

Attachment

TABLE 4.4: OIL EXPRESS

OPINION

The U.S. Department of Energy—headed by none other than that puppet-of-the-President, Les Singer — is now deciding how to implement price control legislation just passed by Congress and signed by the President. Implementing this legislation in the wrong way will destroy the capitalistic spirit in this country by preventing the laws of supply and demand from operating.

It is true that price controls would lower the price of gasoline. But they would also eliminate production of 90 percent of the world's gasoline. Consider how they resulted in rationing of goods during World War II and gas shortages in the 1970s.

What Mr. Singer may not realize is that price reflects the cost of getting gas to consumers. If oil producers do not get paid enough to cover their costs of production, they will not pump oil and no one will have gas.

Mr. Singer has talked about setting the price of gas at the alarmingly low rate of \$1.50 a gallon. At this price, oil producers will not engage in horizontal drilling or inject carbon dioxide into the subsurface for additional oil production.

TABLE 4.4: (continued)**OPINION**

Although these techniques can cost twice as much as traditional wells, they produce far more oil. Without the use of these newer technologies, oil production will be cut back by about 35 percent.

Our economy works because prices tell us what to buy and produce. In 1776, Adam Smith described how this mechanism produced *The Wealth of Nations: It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest... (Man is) led by an invisible hand to promote an end which was no part of his intention.*

Smith is saying that if you want to have gas in your car, you have to pay a price that will compensate the producer's efforts.

Only free markets can determine that price. Government bureaucrats cannot.

J.R. Ewing is President and CEO of Ewing Oil and Gas.

**Transcript of Final Voice Mail from Les Singer**

(Total running time 2 : 15 minutes)

Voice of Secretary Les Singer

Bill, Les here. Thanks for your group's background work on markets. That really helped me sort through some issues about free markets and price-controlled markets. I guess price controls may be fair, but free markets are efficient. The old tradeoff between equity and efficiency is a real dilemma.

Anyway, now we've got to announce, quickly, our policy on price controls and allocating gas. I suggest that your group make this your number-one priority. We plan on explaining our policy to the general public in an Op-Ed piece, which will appear in several major newspapers and wire services next week, so please write it in that form.

Since the legislation only says that we must set a price ceiling on gas and determine the rules for its allocation, we have some leeway in what we can do. So you will need to decide whether we will have a policy that sets the price ceiling below market or above market level—and then decide how to determine who gets gas. That was sharp thinking when you pointed out to me that a price ceiling set above equilibrium lets the market determine price. I would not have thought of that!

Once the public sees the Op-Ed piece and accepts our decision, the DOE Implementation Group will determine the exact price and set the allocation plan into motion. Remember, we must gain public support with our Op-Ed piece, and this can only be done by showing that our policy is grounded in a clear understanding of how both unfettered and price-controlled markets work.

So, to sum things up, your job is to use the Op-Ed piece to persuade the public of the wisdom of our policy—regardless of whether we set the price of gasoline above or below equilibrium. You'll need to justify our policy decision, outline the plans for allocating gas, and identify winners and losers.

Because the President knows that I do not have a strong background in economics, he has requested that the Council of Economic Advisors approve the piece before it goes to print. Given this extra step in getting our policy out to the public, I will need to see your piece in two days. Just so you know, my head is on the block here, and if the Op-Ed piece does not convince the Council of our price control policy, I will have to take some of my staff down with me.

Teacher Materials

Economics Review

Unfettered Markets: An Intuitive Approach

This introductory section provides background information and an intuitive approach to free markets. The benchmark lessons that follow offer a more graphical analysis of market operations.

Economists tend to praise competitive markets because the rational and self-interested forces that characterize economic behavior lead not to a permanent state of chaos but to a harmony of interests. Adam Smith articulated this insight in 1776 in his book, *An Inquiry into the Nature and Causes of the Wealth of Nations*:

Every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, as he is in this, as in many other cases, led by an invisible hand to promote an end which was not part of his intention. Nor is it always the worse for society that it was no part of it. By pursuing his own interest he frequently promotes that of society more effectively than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. (page 423)

Smith felt that the tendency of individuals to act in their own self-interest is a natural law and a natural right that precedes the existence of government. Exercising individual rights in a competitive market creates the greatest good for the greatest number in society. Smith's view, although regarded as a mainstream perspective on capitalism, has been amended to accommodate government provisions of goods when the market fails to provide them in sufficient quantities.

How does this work?

While nobody blames the thermostat (a measure of temperature) for a low temperature, prices (a measure of scarcity) are often blamed when people are not able to obtain a scarce resource. Scarcity is a relationship between desirability and availability—between demand and supply. In a society in which diamonds are highly desired but not available, diamonds are relatively scarce. In a society in which diamonds are not desired and also not available, they are still scarce. A good is scarce whenever people cannot obtain as much of it as they would like without being required to sacrifice something else of value.

If goods are scarce, they must be rationed. Some kind of criterion must be established for discriminating among the claimants as to who gets how much of the good. The criterion could be physical prowess, public esteem, age, willingness to pay money, or anything else. Under capitalism and a market-based economy, willingness to pay money usually determines who gets the good. . . but not always.

- Harvard University has many more applicants than it can take as freshmen, so it must ration its admissions. The university discriminates on the basis of high school grades, test scores, recommendations, etc.
- Although many individuals want to be President of the United States, only one person can serve at a given time. We have developed an elaborate election process to discriminate who becomes President.
- Physically attractive women frequently have several men clamoring for their attention. They must, therefore, ration their attentions. They could use athleticism, intelligence, looks, manners, or something else to discriminate between suitors.

Competition is the result of discriminating among the individuals vying for a good. For example, once Harvard announces its criteria for discriminating among applicants, individuals compete for admission to Harvard based on these criteria. *Competition results from scarcity*, and it can be eliminated only with the elimination of scarcity. It is not confined to capitalist societies or to societies that use money.

4.1. THE INVISIBLE HAND

Whenever scarcity exists, rationing allocates the good according to some criteria for discrimination. Competition is merely what occurs when people strive to meet the criteria used to ration scarce goods.

Nonetheless, the criteria matter. If a society rations on the basis of physical strength, individuals will do strength-enhancing exercises. If a society rations on the basis of *willingness to pay money*, *individuals will work to earn that money, and those that are able and willing to pay the price will get the good*. Poor people will get less than rich people, which many consider to be unfair. However, with nonprice rationing (distributing goods by means other than price), businesses may sell to customers on the basis of age, sexual preference, personal habits, family size, letters of reference, pet ownership, race or ethnicity, etc. These allocations also may not seem fair, and it is hard to tell who will get goods without price as the rationing device.

Let's look at price as a distributional mechanism. What happens when a good, like gasoline, becomes more scarce? In an unfettered market (i.e., one without interferences), consumers will compete for the remaining gasoline by bidding up its price. If prices are not allowed to rise, rationing criteria other than price will be used. Potential purchasers of gasoline will attempt to discover the new criteria for discriminating among buyers, and they will compete against one another in trying to satisfy the new criteria. Their competition will raise the total price—monetary plus nonmonetary—and will continue raising it until the quantity demanded no longer exceeds the quantity supplied.

It is almost always in the interest of suppliers (i.e., producers) to raise the monetary price rather than use another rationing device. The owner of a gasoline station, for example, gains nothing if customers have to wait in line 20 minutes to buy gas. Thus, the increased costs to purchasers from nonprice rationing often are not benefits to the seller.

If suppliers cannot raise prices in the face of increasing shortages, they will look for alternative ways to turn the situation to their advantage. For example, gasoline retailers may reduce their daily hours of operation, since they can probably sell all of their supply in a shorter period of time. This may further increase the price—monetary plus nonmonetary costs—of gasoline to buyers. Gasoline retailers may also sell gasoline in an illegal (black) market, in which they can sell it at a higher price.

Price, therefore, serves as an important rationing device in market economies. This is not to say that it is the perfect means of coordinating the production and distribution of goods. Under some conditions monetary prices may not reflect people's preferences adequately. Ignorance, market power, collusive arrangements, disagreements about property rights, and inequalities in society all interfere with the "ideal" operation of the price system and can drive a wedge between price and people's preferences.

Consider other rationing mechanisms and their potential difficulties.

- **Need.** The idea of rationing according to need may be intuitively appealing, but the definition of need is vague, subjective, arbitrary, relative, uncertain, and subject to abuse.
- **First come, first served.** Standing in line increases the nonmonetary price paid for the good. This rationing device is appealing to those who have a relatively low opportunity cost of time, such as low-wage workers and retirees.
- **Lottery, or equal shares for all.** While this rationing scheme takes some of the arbitrariness out of rationing, it ignores the differences in individual needs for a good. Does everyone have an equal right to gasoline—even those who do not own a car, or those who are too young to drive?
- **Merit.** Rationing can be based on providing the good to those who deserve it. The problem arises in defining who deserves it. Should a prize be awarded to the person who tries the hardest to obtain it, or to the one who has performed the best?

Nonprice rationing mechanisms also ignore the problem of supply incentives. People produce goods because they want to be rewarded for their efforts. A system for rationing scarce goods that does not provide appropriate rewards for those who make the goods eventually will fail because most goods simply would not be produced if the producer were not compensated.

Finally, prices serve as a signal for economizing. Because people can use money to purchase a wide variety of goods and services, a rising price creates an incentive to economize on that good's consumption so other goods and services

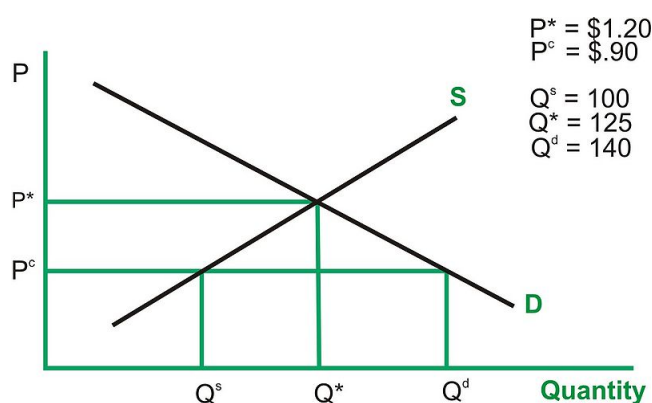
can be purchased. For example, the rising price of gasoline, in the face of increasing scarcity, signals individuals to economize. They begin looking for ways to reduce usage—through carpools, walking, public transportation, more efficient cars, etc. If the price of gasoline is kept low, say with price ceilings, individuals do not have an incentive to economize, and they will continue to use gasoline at levels consistent with less scarcity.

Price Controls: Price Ceilings and Floors

Sometimes the general public and/or governments feel that the forces of supply and demand result in prices that are either unfairly high to buyers or unfairly low to sellers. In such cases, government may intervene by legally limiting how high or low the price may go.

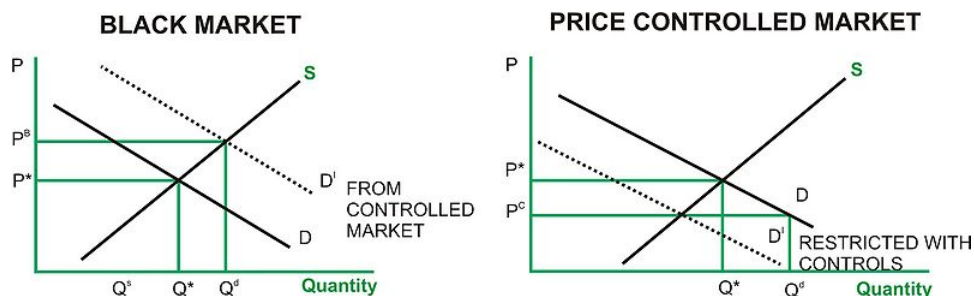
A Price-Controlled Market: Price Ceilings

A price ceiling is the maximum legal price a seller can charge for a good or service. The rationale for ceiling prices is that they enable consumers to obtain some “essential” good or service that they could not afford at the equilibrium price. (Examples are provided in the Case Studies benchmark lesson). The figure at right illustrates the effect of one type of price control, price ceilings, on the market.



Let's say the market starts in equilibrium. P^* is the equilibrium price and Q^* is the equilibrium quantity. At P^* (\$1.20), the quantity demanded by consumers is exactly the same as that supplied by firms, and 125 units will be bought and sold. If price controls establish a ceiling below \$1.20 (say \$.90), a shortage will ensue. At a price of \$.90, firms will only supply 100 units of the good, but consumers will be able and willing to pay for 140 units. The government will be faced with the problem of rationing the 100 units among 140 consumers (assuming one consumer per good). As long as price remains below P^* , the shortages will continue.

What if a black market exists in which the price of the good is allowed to rise? The consumers who are able and willing to pay a higher price for the good and do not obtain it in the legal market will move into the black market, thereby increasing demand for the good and its price in that market, as the figure below shows. This move may exacerbate shortages in the legal market if producers can capture the price increase in the black market by moving some of the supply from the lower-price legal market to the higher-price black market. The figure below illustrates the effect of a black market on demand.



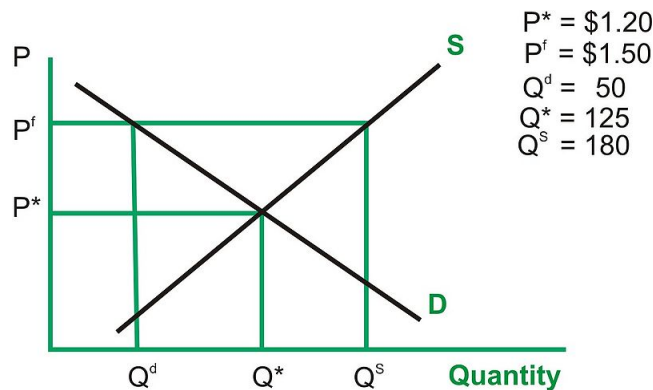
P

Once a price control sets price below P^* to P^c , some consumers will not be able to obtain the good, effectively reducing demand in the price-controlled market to D' . These individuals will move into the black market (assuming no additional costs are borne with this move), increasing demand for gasoline to D' in this market—which will increase price to P

B above the originally set price of P^ .*

A Price-Controlled Market: Price Floors

A price floor is a minimum price established by the government that is above equilibrium price. Price floors generally have been invoked when society has felt that the free-functioning market is not providing a sufficient price for the good. Minimum wage legislation and price supports for agricultural products are examples. The figure at right illustrates the effect of price floors on the market.



Let's say the market starts in equilibrium. P^* is the established price and Q^* is the established quantity. At P^* (\$1.20), the quantity demanded by consumers is exactly the same as that supplied by firms, and 125 units will be bought and sold. If a price floor is established above \$1.20 (say \$1.50), a surplus will ensue. At a price of \$1.50, firms will supply 180 units of the good, but consumers will only be able and willing to pay for 50 units. The government will be faced with the problem of getting rid of 130 units. As long as price remains above P^* , the surpluses will continue. In the labor market, prices are wages and quantities are laborers and 130 workers would be able and willing to work, but employers would not hire them at the legally set wage.

Markets: A User-Friendly Guide

One of the main strengths of economic theory is its ability to provide a general explanation for the way in which price and output are determined, even though each industry has idiosyncrasies that underlie pricing and production.

In general, economists describe four distinct market structures, each with a pricing and output generated from the market forces.

- Pure competition
- Monopolistic competition
- Oligopoly
- Pure monopoly

The table below briefly describes the characteristics of each of the four markets. Although markets are structured along a continuum and not discrete markets, the typology allows us to illustrate the two key characteristics that underlie movement from the competitive end of the spectrum to the monopoly end: 1) ease of entry into the market, and 2) ease of substituting a firm's product with others. In pure competition, firms freely enter the market, and each firm's product is identical to all others. In pure monopoly, absolute barriers exist to entry of new firms, and the firm's product is unique and has no close substitutes. As a firm moves from a purely competitive market to a monopolistic market, its control over price and profit potential increases.

TABLE 4.5:

Characteristic	Pure Competition	Monopolistic Competition	Oligopoly	Pure Monopoly
Number firms	A very large number	Many	Few	One
Type of product	Homogeneous with other firms	Differentiated	Homogeneous or differentiated	Unique—no close substitutes
Control over price	None	Very limited	Mutual dependence between firms	Considerable
Conditions of entry	No obstacles	Relatively easy	Significant obstacles	Absolute barriers
Nonprice competition	None	Considerable (advertising)	Usually considerable, if product differentiation	Mostly public relations
Typical examples	Agriculture	Apparel	Automobiles	Local utilities

General Characteristics of Firms in Each Type of Market

Pure Competition

Firms operating in a perfectly competitive market face competition from a *large number of firms, all of which have identical products*. However, because so many firms operate in this market, each firm operates independently of the others. All firms in the industry make a standardized (homogeneous) product, and the consumer is indifferent as to which product s/he buys. These characteristics mean that all products in the market have perfect substitutes (e.g., fresh corn), nonprice competition does not exist among the firms (e.g., no advertising to differentiate products), and firms are price takers. Price-taking behavior means that firms have no influence on price and can sell all they want at the going market price. If they try to raise the price of their good, no one will buy it. Instead, consumers will purchase the identical product at a lower price from another firm. No incentive exists for a firm to lower the price, because it can sell all it wants at the going market price. Lowering price would simply decrease total revenue, since the same amount can be sold at the higher price. Firms are free to enter and leave a perfectly competitive market. No legal, technological, or financial (for example) obstacles exist for new firms to enter the market or firms currently in the market to leave.

Monopolistic Competition

Firms operating in a monopolistically competitive market face competition from a *large number of firms, all of which offer a similar but not identical product*. While the “large number of firms” might not be as large as the number in the competitive market, each firm has a small percent of the market (defined as firms producing similar products). With a relatively small market share, firms have relatively little control over market price and cannot collude with other firms on pricing or quantity produced. As a result, firms are not mutually interdependent, and each firm determines its policies without considering or knowing the possible reactions of rival firms.

Oligopoly

Firms operating in an oligopolistic industry face *market domination by only a few firms*. “Few” means that the firms are mutually interdependent, as each firm considers the possible reactions of its rivals to its price, advertising, and production activities. Firms in an oligopolistic market may produce either a homogeneous (e.g., steel) or differentiated (e.g., automobile) product. The critical element is the mutual dependence among firms in the industry, not the nature of the product.

Pure Monopoly

The firm operating in a pure monopoly market is the *only firm in that industry, producing a specific product with no close substitutes*. The firm and the industry are synonymous. Because the monopolist’s product is unique, the buyer sees no alternative to purchasing the good and must buy the good from the monopolist or go without it. This uniqueness gives the firm a great deal of control over price. As the only firm operating in the market, the monopolist

is responsible for setting the total quantity of the good supplied and then setting the selling price so all of the quantity produced is sold (i.e., it is a price maker). It can change the product's price by manipulating the quantity of product supplied, but it is constrained in setting a price by the downsloping demand curve for its product. Economies of scale and technological or legal barriers (for example) must completely block entry into the industry for monopoly power to exist. Although a monopolist faces no competition from other firms, it still could have an interest in advertising to stimulate demand for its product (e.g., diamonds).

Pricing and Output in Markets

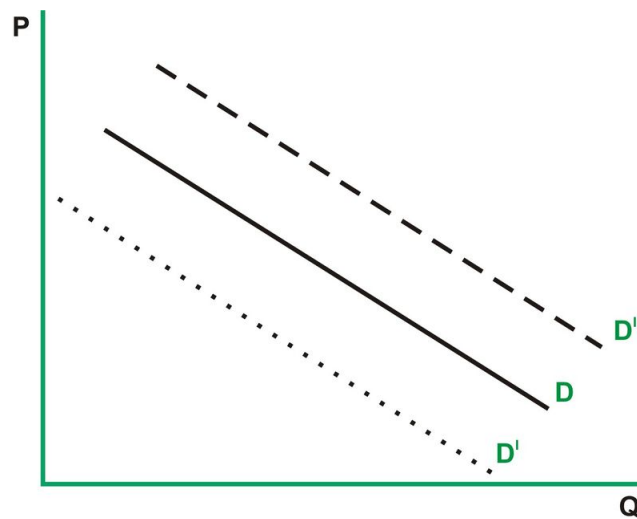
General principles of market operation apply in determining equilibrium price and quantity in all markets. In developing these general principles, we assume that firms maximize profits and that entry into and exit from a market is relatively easy.

A market is an institution or mechanism that brings together “buyers” (those who want the good) and “sellers” (those who make the good). Markets come in all forms. A farmer’s roadside stand, retail stores, and the New York Stock Exchange are all examples of firms operating in different markets. In fact, any situation that links potential buyers and sellers constitutes a market. Markets can be local, national, or international. Some markets are highly personal while others are highly impersonal.

One of the most important activities in markets is setting the price of goods. To understand the determination of prices, we must understand the mechanics underlying the decisions of consumers (demand) and producers (supply).

Demand

A demand schedule shows the various amounts of a product that consumers are *willing and able* to purchase at each price (in a series of possible prices) during a specified period of time. We usually look at demand from the vantage point of price because we are interested in how much individuals are able and willing to purchase at a given price. Remember that a demand schedule does not tell us which price will actually exist. For that, we must combine information from the demand schedule with information from the supply schedule.



The fundamental characteristic of demand is summarized in the law of demand: All else equal, as price falls, the quantity demanded rises (or all else equal, as the price rises, the quantity demanded falls). This law is shown in the demand curve (D) illustrated on the graph at right, in which Price (P) is plotted with Quantity (Q).

What “all else” must be “equal” in order to graph the demand curve plotted here? Basically, there are five determinants of demand, or factors that can shift the demand curve plotted here (i.e., the “equals”). Notice that when demand is shifted outward by one of these factors (D''), more will be sold at each price. When demand is shifted inward (D'), less will be sold at each price. Factors that determine demand are:

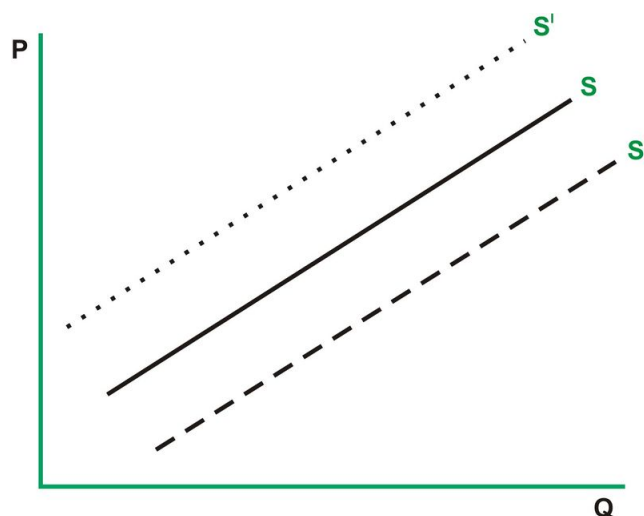
- Change in buyer tastes.** A favorable change in how buyers perceive the product will increase demand (i.e., shift curve out). A negative change will reduce demand (i.e., shift curve inward).

- b. **Change in number of buyers.** An increase in the number of buyers in the market (say people move into an area) will increase demand, while a decrease in the number of buyers will decrease demand.
- c. **Change in income.** The impact of income on demand is not straightforward. If a positive relationship between income and demand exists, income increases lead to demand increases. Goods exhibiting these characteristics are called normal goods, and we buy more of them when our income goes up and less of them when our income goes down. Some goods have an inverse relationship between income and demand. These are called inferior goods. As income goes up, demand goes down—and as income goes down, demand goes up. Examples include such things as used clothing, which people often buy only when their income is low.
- d. **Change in prices of related goods.** Whether a change in the price of another good increases or decreases a product's demand depends on whether the related good is a substitute or complement. A substitute good is used in place of another good, and a complement good is used in conjunction with it. When goods are substitutes, as the price of one good rises (falls), demand for the other good rises (falls) because people switch from the good with the higher price to the one with the lower price. Air travel on different airlines, and things like butter and margarine, are often viewed as substitutes. Conversely, when goods are complements, as the price of one good rises (falls), demand for the other good falls (rises) because people cut back on consumption of both (complementary) goods with price changes. Peanut butter and jelly, tennis balls and tennis racquets, and CD players and CDs are often viewed as complementary goods.
- e. **Change in expectations.** Consumer expectations about future prices, product availability, and future income can shift demand. Expectations of higher prices may prompt them to buy now to “beat” the anticipated price increases, or an expected rise of income may induce consumers to be freer in their current spending. Conversely, expectations of lower prices or income may cause consumers to curtail spending in the current period.

Supply

A supply schedule shows the amount firms are *able and willing* to produce (in a series of possible prices) during a specified period of time. We usually look at supply from the vantage point of price because we are interested in how much firms are able and willing to produce at a given price. A positive relationship between price and quantity produced arises because firms are willing to produce more at higher prices than lower prices. They must receive higher prices to produce more because marginal costs generally increase with more produced. [Note: This contrasts to the behavior of consumers, for which price serves as a deterrent to purchasing the good.] All else equal, a firm will make more of a good at a higher price because profits will be greater as the price rises.

Remember, a supply schedule does not tell us which price will actually exist. For that we must combine information from the supply schedule with information from the demand schedule.



A fundamental characteristic of supply can be summarized in the law of supply: All else equal, as price rises, the

4.1. THE INVISIBLE HAND

quantity supplied rises (or all else equal, as the price falls, the quantity supplied falls). This law is illustrated in the supply curve (S) illustrated on the graph at right, in which Price (P) is plotted with Quantity (Q) .

What “all else” must be “equal” in order to graph the supply curve plotted above? Basically, there are six determinants of supply, or factors that can shift the supply curve plotted above (i.e., the “equals”). Notice that when supply is shifted outward by one of these factors (S'') , more will be produced at each price. When supply is shifted inward (S') , less will be produced at each price. Factors that determine supply are:

- Resource prices.** A firm’s supply curve is based on its production costs. It follows that a fall in resource prices will lower production costs and increase supply, and that a rise in resource prices will increase production costs and decrease supply.
- Technology.** A technological improvement generally means that fewer resources are needed to produce a given quantity. As a result, production costs decrease and supply increases with technological advances.
- Taxes and subsidies.** Firms treat most taxes as costs and most subsidies as revenues. An increase in taxes, therefore, will increase production costs and lower supply, and conversely. An increase in subsidies will lower production costs and increase supply, and conversely.
- Prices of other goods.** Changes in the price of other goods can also shift the supply curve if the two products are related in production. For example, if the price of wheat increases, farmers may plant wheat instead of corn. In this case, the products are production substitutes.
- Expectations.** The future price of a product can affect a firm’s current willingness to supply that product. If price is expected to rise in the future, firms may withhold some of the product to take advantage of expected higher prices, and conversely.
- Number of sellers.** The larger the number of suppliers, the greater the amount of the good supplied in the market.

Equilibrium

By bringing together supply and demand, we can see how the buying decisions of consumers and the selling decisions of producers determine the price of a product and the quantity bought and sold in the market. Let’s examine the market for gasoline in a given time period. The table below gives the schedule of quantity demanded and quantity supplied.

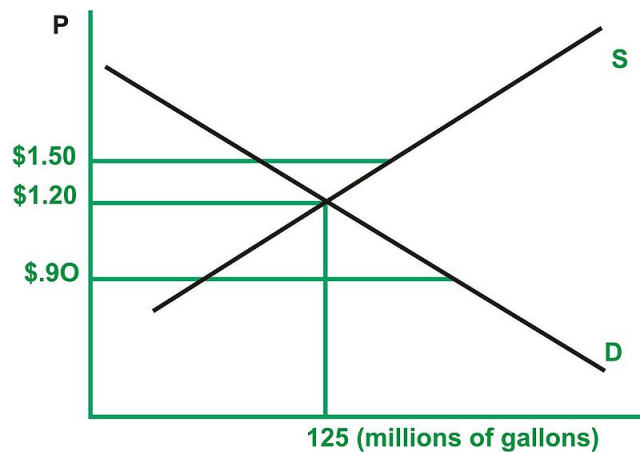
TABLE 4.6:

Price	Quantity Demanded (in millions)	Quantity Supplied (in millions)	Shortage (–) or Surplus (+)	Pressure on Price
\$2.00	40	200	+160	↓
\$1.50	100	160	+60	↓
\$1.20	125	125	0	0
\$1.00	135	110	–25	↑
\$.90	140	100	–40	↑
\$.60	200	25	–175	↑

Of the six possible prices at which gasoline might sell, equilibrium will be reached when 125 million gallons sell for \$1.20 per gallon. How did we arrive at this price? Let’s assume that for some reason the price started at \$1.50. What happens? 60 million gallons cannot be sold, and a surplus of gasoline exists. To sell the gas, as opposed to having to dispose of it, the firm will lower the price, knowing that a decrease in price will lead to an increase in quantity demanded. At any price above the market clearing price of \$1.20 , an excess supply of gasoline (i.e., a surplus) exists and, as a result, firms will lower the price.

What if price falls below \$1.20? At prices below \$1.20 shortages exist—more people want gasoline than is being produced. As a result, upward pressure on price occurs as people bid up the price of gas. More simply, some individuals are able and willing to pay a higher price for gasoline (as the quantity demanded column indicates) and

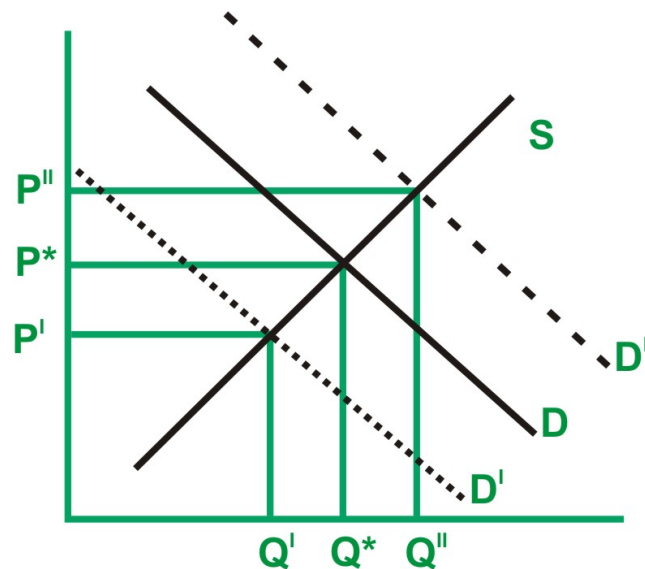
will offer to pay more than the price to obtain it. As price rises, fewer people are able and willing to buy gasoline and the shortage lessens.



Neither shortages nor surpluses exist at the market clearing price of \$1.20. Price has served as the equilibrating mechanism to clear the market. This market is graphically illustrated at right.

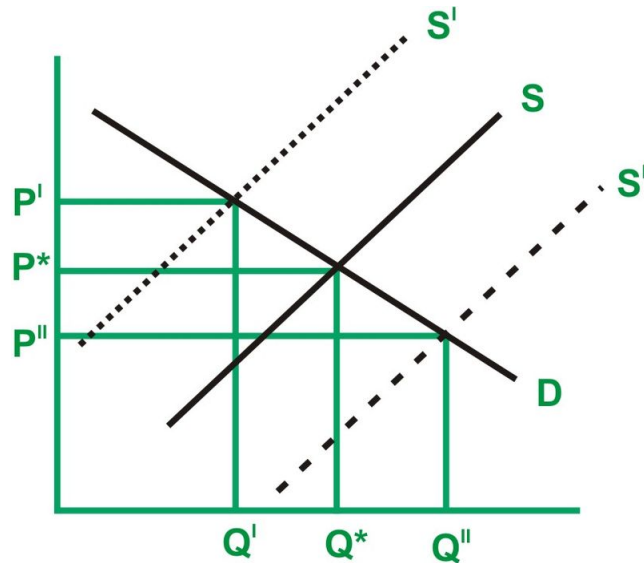
Of course, this graph can be used to illustrate only changes in quantity demanded or quantity supplied—movements along the demand or supply curve in response to changes in the price of gas. In the graph, everything but price and quantity is held constant. The equilibrium price will change with changes in either demand or supply—that is, when either the demand or supply curve shifts. When this occurs, it is easy to predict how price and quantity will change.

1. **Demand increase.** Price and quantity will both increase (from P^*Q^* to $P''Q''$), as illustrated at right (in D'').



2. **Demand decrease.** Price and quantity will both decrease (from P^*Q^* to $P'Q'$), as illustrated at right (in D').

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3. **Supply increase.** Price will decrease and quantity will increase (from P^*Q^* to $P''Q''$), as illustrated at right (in S'').

4. **Supply decrease.** Price will increase and quantity will decrease (from P^*Q^* to $P'Q'$), as illustrated at right (in S').

Competition and Free Markets

Remember the characteristics of a competitive market:

- Very large number of firms in the industry
- Homogeneous product
- Price taker
- Free entry and exit

Because each firm in a competitive market produces a negligible fraction of total industry supply, a firm cannot influence the market price, and supply and demand forces set the equilibrium price. The firm in a competitive market adjusts its output to the market price. It takes this market price as a piece of information and uses it to establish levels of production. This means that the demand curve facing a firm in a competitive market is perfectly elastic at market price, signifying that the firm can sell all it wants at the going market price.

How much will the firm produce? The firm sets its output levels where profits are maximized, which is where total revenue exceeds total cost by the largest amount. At this point, the amount of revenue brought in from the last unit sold (marginal revenue) equals the cost of its production (marginal cost). Should profits exist, more firms will enter the industry and market supply will increase, which will lower price. The lowering of price will decrease a firm's profits. Firms will continue to enter and drive down price as long as profit exists. The entry of firms into the market and reduction of price will eventually eliminate all profits.

What if the price dictated by the market does not cover costs? That is, total revenue never exceeds total cost and losses ensue. In this case, firms will leave the market. As firms exit the market and market supply decreases, price will rise and increase the total revenue for the remaining firms. As firms continue to exit and price continues to rise, losses will be reduced for firms remaining in the market. The exit of firms and increase of price will eventually eliminate all losses.

The entry and exit of firms from the market will eliminate all profits and losses in the long run. As a consequence, firms in a competitive market will not have profits or losses in the long run, although in the short run either could exist. Note that when we say no profit exists, we mean no economic profit exists. Normal profit (i.e., on-the-books profit) exists because economic profit includes a normal return on investment as part of its costs.

Bottom Line on Competition

Advantages

- In the long run, each firm operates at optimum efficiency (i.e., lowest per-unit cost). Resources could not possibly be arranged more efficiently.
- The consumer gets the product at *the lowest possible price*, since competition eliminates all economic profit.
- Resources could not be rearranged to produce goods and services that would give consumers more satisfaction.

Disadvantages

- Competition may be most efficient at a point in time but not *over time*. Since profits are eliminated, the competitive firm may not undertake research and development, and therefore a slower rate of technical process will ensue.
- Perfect competition is most efficient only without social costs, social benefits, or economies of scale in the relevant range of production.

Competition may produce too much inequality. Too much, of course, is in the eye of the beholder.

Markets with Price Controls: Case Studies

Rent Control in New York City: A Price Ceiling

Since 1943, New York City (NYC) has had a system of rent controls that impose ceilings on rents. The purpose was to establish a rent (the price of an apartment for a month) below the equilibrium level so the poor could better afford a place to live.

In the short run, rent control is likely to transfer income from landlords to tenants. However, rent control can have some very undesirable effects. Shortages result because the quantity of apartments demanded exceeds the quantity supplied. Estimates suggest that NYC now has about a \$3 billion shortage of new rental housing, despite a population loss in past decades and the nation's largest government-assisted, middle-income and low-rent public housing programs. It can take a year or more to obtain an apartment in NYC today.

Because the quantity demanded exceeds the quantity supplied for NYC apartments, some device other than price must ration the available apartments. This allows landlords to discriminate in choosing tenants, accept side payments or bribes from those looking for housing, and curtail maintenance. Renters are willing to pay bribes, accept poorer service, and handle maintenance themselves because of the housing shortage. In addition, landlords often try to subdivide apartments, since the rent ceiling on the subdivisions may exceed that of the original apartment.

Studies show that rent controls do keep the cost of housing down for renters **who are able to keep or obtain rent-controlled apartments**. For housing units built before 1943, the average increase in rents was about 2% per year, and the average increase in landlords' costs was about 6% a year. Not surprisingly, relatively little new housing has been built since rent controls were enacted, and existing housing is often poorly maintained.

Rent Control in California Mobile Home Parks: A Price Ceiling

Rent control laws covering mobile home parks are common in California. A mobile home park is a tract of land on which pads are rented to residents who live in mobile homes that they own. Once placed on a pad, very few mobile homes are ever moved. The rent control laws prevent the owners of mobile home parks from raising rents in accord with increases in their costs. In a case involving the city of Santa Barbara, the U.S. Court of Appeals expressed its concern that these laws have "eviscerated" the property rights of the park owners and given "a windfall to current park tenants at the expense of current mobile park owners."

Studies have shown that these laws increase the price of mobile homes in communities with price ceilings. In fact, the price of a mobile home tends to be about 32% higher in communities with rent-controlled mobile home parks than in communities without them. (The demand curve for mobile homes is pushed outward, as demand for the homes increases with the reduction in price of a complementary good, the rental of the land, which thereby raises

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the price of a home.) Once rent control laws are enacted, mobile home owners in areas with price ceilings see the value of their mobile homes rise, while the rent paid to park owners falls.

Office of Price Administration and WWII: Price Ceilings

During World War II, the market price of many civilian goods was driven upward as war production created shortages. Tires, gasoline, and many consumer products were exceedingly scarce, and some products disappeared altogether during the war (e.g., new car production ceased after April 1942). The result was that some sellers who possessed products in short supply could and did charge a “high” price—one that the market would bear. Often the selling price was many times over the actual cost. Charges of price gouging were rampant, and many goods went only to those who could and would pay the high prices.

In response, President Franklin D. Roosevelt established a system of price controls to maintain some “equitable” price structure under war-generated shortages. He also established the U.S. Office of Price Administration (OPA) to regulate the price controls. In April 1942 the OPA issued a general maximum-price regulation, making prices charged in March 1942 the ceiling price for most commodities. As real prices continued to rise, the OPA implemented drives to secure compliance. The drives included giving each consumer a small share of a commodity in an effort to reduce the scramble for supply that would produce black markets.

Goods were rationed using unit and point systems. Under the unit system, a ration ticket permitted the consumer to purchase a specified quantity of a rationed good at the fixed monetary price. The coupon was used for most products other than processed foods, meats, and fats, which were rationed under another system. Sometimes shares of the goods were equal, but other times shares were rationed through a complex formula designed to tailor the shares to a consumer’s needs (e.g., gasoline).

The point system was used to ration processed foods (the “blue” point system) and meats and fats (the “red” point system). Under point rationing, the consumer received a certain number of points, which could be used to purchase a specified range of rationed commodities that sold at varying point prices. The consumer had to pay controlled money prices for other food products. This gave consumers some choice while also receiving a fair share of the controlled commodity.

Problems with the price controls and rationing abounded. The ration tickets were like currency and were frequently referred to as ration currency. Consequently, ration coupons were counterfeited and sometimes currency was overissued, which led to point inflation or bare shelves. Markets were inefficient. Because prices could not adjust between commodities and regional price variations could not occur, markets could not reallocate supplies and locational shortages developed. Shortages of fluid milk existed in southern and western cities. The northeast was plagued by gasoline shortages, and the west and rural areas witnessed shortages of clothing.

Evasion of the rationing controls became widespread. To suppress evasion, the OPA increased control over the marketplace through injunctions, license suspensions, treble damage suits, and criminal proceedings. The treble damage suit was the most used sanction. However, evasion techniques evolved for commodities, including:

- **Food:** Evasion existed in the form of overcharging of food prices and tie-in sales. Wholesalers complained that meat packers forced them to take a variety of unwanted products along with the more desirable cuts. Quality deterioration or “adulteration” became a serious problem adding fat to hamburger, reducing the butterfat content of milk, adding cornstarch to spices, stretching coffee with fillers. Upgrading (selling lower quality merchandise as if it were a higher quality) and short-weighting were common.
- **Clothing:** Evasion generally took two forms: quality deterioration and forced upgrading. This was a difficult area to control because clothing is a highly diversified commodity and seasonal changes made it hard to specify prices. In addition, clothing relied heavily on the cotton industry, which had powerful friends in Congress.
- **Shelter:** Despite widespread support for rent controls, evasion was widespread. Owner-occupied housing was not controlled, so rental owners could evict their tenants, sell the property at market price, and have the buyer pay in monthly installments with an extremely slow accumulation of equity. Other forms of evasion included bribes and cash on the side. In 1946, rents in Portland, Oregon, ranged from \$38 to \$60 a month, plus black market bribes ranging from \$5 to \$500 to get the apartment and monthly side payments of \$10 to \$15.

- **Fuel:** Stations frequently would sell gasoline without receiving ration coupons, and counterfeiting of gasoline coupons was common. Quality deterioration, upgrading, short-weighting, tie-in sales, and cash on the side were also common. By January 1945, an estimated one in 16 stations had been sanctioned by the OPA.

At the end of the war price controls and rationing were gradually abolished. The OPA was finally disbanded in 1947.

Nixon and Wage/Price Controls: Price Ceilings

Rampant inflation in the late 1960s created a need to curb rising prices without economic contraction. Bill Burns, Federal Reserve Chair, believed that wage and price controls could augment monetary policy to achieve this goal. Early in 1970, Congress passed the Economic Stabilization Act, which gave President Richard Nixon the authority to impose price controls. On August 15, 1971, the first phase of wage and price controls began. Wages, prices, and rents were frozen for 90 days, and contradictory fiscal policy measures were implemented. In Phase II, a mandatory system of wage and price controls was developed to allow for controlled adjustments through 1972. Phase III moved toward voluntary controls and a greater reliance on market adjustments, but prices rose rapidly. In June 1973, the administration imposed a 60-day freeze on many wages and prices. Shortages resulted, especially in food products. Phase IV began the decontrol of prices in August 1973; and on April 30, 1974, all wage and price controls were terminated.

Nixon's wage and price controls created supply uncertainties and resource misallocation. They reduced production, which caused even higher prices. For the most part, instead of restraining wages and prices, they reduced the profit margins of businesses. This meant that once controls were removed, catch-up price inflation occurred.

Concept Definitions

The curriculum is designed to teach the following concepts:

Black market: A market in which sellers illegally sell to buyers at higher than legal prices.

Demand Purchases of a good or service that consumers are able and willing to make, given its price and the choices available to them. The law of demand states that a negative (or inverse) relationship exists between price and quantity demanded. That is, as price increases (decreases) the amount of a good purchased decreases (increases). Demand is determined by consumer tastes and income and by the price of other goods. The demand schedule is a table showing the quantities of a good that will be purchased at various prices. The demand curve relates the price of a good and the quantity of the good that individuals are able and willing to purchase. Aggregate demand is the total demand for goods and services in the economy, including households (for consumer goods), firms and government (for investment goods), and other countries (for exports).

Equilibrium price The price where the quantity demanded and the quantity supplied are equal. The price where neither shortages nor surpluses exist and no incentive exists for prices to rise or fall.

Equilibrium quantity The quantity at which the amount that buyers are able and willing to purchase exactly equals the amount of the product that sellers will sell. This occurs at equilibrium price.

Market An arrangement that allows buyers and sellers to exchange things. A buyer exchanges money for a product, while a seller exchanges a product for money.

Market Economy An economic system (method of organization) in which only the private decisions of consumers, resource suppliers, and producers determine how resources are allocated.

Nonprice rationing Controlled distribution of scarce resources, goods, and services by means other than price. Examples include resources or goods being distributed on a particular day or at a particular time through queues (standing in line; coupons; first come, first served; lottery etc.). Nonprice rationing stands in contrast to price rationing, which means that those with the most money or assets and who want the good the most get it.

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Opportunity Costs The real sacrifice involved in achieving something. The value of the next best opportunity that would have to be foregone in order to achieve a particular thing.

Price The quantity of money (or other goods and services) paid and received for a unit of a good or service. The nominal price of a good is its dollar (or other unit) value. The real price of a good is how many other goods must be foregone for its purchase.

Price ceiling A legally established maximum price for a good or service.

Price control Any legally set price for a good or service.

Scarcity A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

Shortage The amount by which the quantity demanded of a good or service exceeds the quantity supplied at a given (below equilibrium) price.

Supply The amount of a good or service that a firm is prepared to sell at a given price. The firm determines how to supply using its marginal cost curve. Industry supply is a generally the summation of an individual firm's marginal cost curves (in a constant cost industry). The supply schedule is a table showing the amount of a good that will be produced at a given price. The supply curve relates the quantity of a good supplied by a firm (or market) at each price. The law of supply dictates that the curve is upsloping, indicating the more will be produced as the price of the good increases. Aggregate supply is the total amount of the good available for consumption, consisting of both domestically produced goods and services and imports.

Tradeoff An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

Unfettered market A market in which buyers and sellers are permitted to carry out transactions based solely on mutual agreement, without intervention from government, except for the simple protection of property rights and enforcement of contracts.

Teachers can also demonstrate the following concepts using this lesson:

Command Economy An economic system (method of organization) in which property resources are publicly owned and central economic planning is used to direct and coordinate economic activities.

Price floor A legally determined price that is above equilibrium price.

Surplus The amount by which the quantity supplied exceeds the quantity demanded at a given (above equilibrium) price.

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be

shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5 , “Meets Standards” equals a 3 , and “Does Not Meet Standards” equals a 1 or 2 . We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

SAMPLE MEMO ON MARKET OPERATIONS

MEMO

DATE: *(Month, Day, Year)*

TO: Secretary Singer

FROM: Policy Group

RE: Markets and Price Ceilings

The price of goods determines how much will be produced by suppliers and how much will be bought by individuals. Producers do the simple calculation: how much will it cost me to make the product, and how much money will it bring in? If the good brings in more money than it costs to make, the firm will make it. If not, the firm will not. Consumers assess the happiness they will get from buying the good against its price. If consumers get more happiness from that good than its price, they will buy it. If not, they will not.

A market is all of these individual decisions put together. If consumers get a lot of happiness from a good, they may be willing to pay more than the price to get it. If there isn't enough of the good, they will pay more than its price to get it. As consumers pay more for the good, firms will make more of it because they can get a higher price. Higher prices indicate that people want more of the good, and firms respond by producing more of it. Lower prices mean that people want less of a good, and firms respond by making less. Because governments cannot know how much people like the good or how much it really costs to produce it, governments cannot know how much of a good should be produced. Only a market-determined price reflects this information.

The bottom line is that a free market works because people and firms agree to a price through a bidding process. People are happy with the price because they can get as much of the good as they want. Firms are happy with the price because they can cover their costs and sell all they produce.

There are no shortages or surpluses in a free market, but the solution may not seem fair to people who cannot afford to pay the price. Setting a price ceiling so more people can afford a good will create shortages, and as a result, something will have to be done to determine who will get the good. People who don't get it at the lower price will not be happy, will think the price is not fair, and will bid up the price in a black market.

TABLE 4.7: The Invisible Hand: Rubric for Memo on Free Markets

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding of Economics (80%) Key Points: <ul style="list-style-type: none"> • How free markets allocate scarce goods and services by rationing by price • How price ceilings affect supply and demand • How price ceilings may cause shortages and hurt some consumers 	<p>All of the key points are clearly, accurately and completely discussed using sound economic thinking and vocabulary</p>	<p>All of the key points are clearly and accurately discussed while attempting to use economic thinking and vocabulary</p>	<p>The information used is unclear and/or economic thinking may be incorrect; any or all of the key points may be missing or inaccurately discussed</p>
Quality of Writing (20%)	<p>Writing is in the proper memo form; uses non-technical language and contains no graphs; tone is entirely appropriate to the audience</p> <p>Writing is free of significant errors in mechanics and grammar; ideas are well organized and clearly understandable</p> <p>Describes the problem clearly, accurately</p>	<p>Writing is in the proper memo form; it contains no graphs and for the most part uses non-technical language; tone is for the most part appropriate to the audience</p> <p>Writing has few significant errors in mechanics and grammar; ideas are for the most part organized and understandable</p>	<p>Writing is not in the proper memo form; it may use technical language and contain graphs; tone is not appropriate to the audience</p> <p>Writing has several significant errors in mechanics and grammar; ideas are not clearly organized and/or understandable</p>
Understanding of the Problem (10%) Key Aspects: <ul style="list-style-type: none"> • The need to create a policy on price controls and allocating gasoline in response to Congressional action • The need to write a persuasive op-ed piece to convince the public of the wisdom of the policy 	<p>Describes the problem clearly, accurately and completely in terms of all key points</p> <p>Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics</p>	<p>Describes the problem clearly and accurately in terms of all key points</p> <p>Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts “made up” to avoid grappling with key aspects of economics</p>	<p>Does not describe the problem clearly or accurately in terms of some or all key points</p> <p>Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts “made up” to avoid grappling with key aspects of economics</p>

TABLE 4.7: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding of Economics (70%) Key Points: <ul style="list-style-type: none"> • The negatives that arise for the market if price controls are set • The costs and benefits of price controls and of prices set in the free market • How a price ceiling set above equilibrium lets the market determine price • Identification of winners and losers under the proposed policy 	Clear and accurate economic thinking and vocabulary are used to demonstrate an understanding of how prices are determined; all of the key points are discussed in detail	Clear and accurate economic thinking and vocabulary are used to demonstrate an understanding of how prices are determined; most of the key points are discussed in some detail	Economic thinking and vocabulary, if used, are unclear and/or inaccurate; most or all key points are not discussed
Quality of Writing (20%)	Writing is highly persuasive; it defends the policy with precise and relevant evidence Writing is in the proper Op-Ed piece style; uses non-technical language; tone is entirely appropriate to the audience Writing is free of significant errors in mechanics and grammar; ideas are well organized and clearly understandable	Writing is generally persuasive; it defends the policy with relevant evidence Writing is in the proper Op-Ed piece style; uses non-technical language; tone is generally appropriate to the audience Writing has few significant errors in mechanics and grammar; ideas are for the most part organized and understandable	Writing is not persuasive; it does not defend the policy with relevant evidence Writing is not in the proper Op-Ed piece style; may use technical language; tone is not appropriate to the audience Writing has several significant errors in mechanics and grammar; ideas are not clearly organized and/or understandable

Test for The Invisible Hand

Name _____

PLEASE BUBBLE IN YOUR ANSWERS COMPLETELY—LIKE THIS "Bold"

1. Business firms wish to sell their products at high prices. Households wish to buy products at low prices. In a market economy this conflict of interest is resolved by:
 - a. lawsuits
 - b. government
 - c. competition
 - d. collective bargaining

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2. A newspaper reports that the price of gasoline increased and the quantity sold decreased. In a competitive market, this situation would most likely be the result of:
 - a. an increase in demand
 - b. an increase in supply
 - c. a decrease in demand
 - d. a decrease in supply
3. Why do medical doctors generally earn more than farmers?
 - a. Medical doctors are more efficient than farmers.
 - b. Medical doctors provide a service rather than make a product.
 - c. There are fewer medical doctors than farmers in our economy.
 - d. Medical doctors are scarcer, given the demand for their services.
4. In a competitive market, the price of a product is \$5.00. If the government passes a law that sets a minimum price of the product at \$6.00, this change will result in:
 - a. a surplus of the product
 - b. a shortage of the product
 - c. a decrease in the supply of the product
 - d. an increase in the demand for the product
5. Which would most likely increase the quantity of gasoline sold in a competitive market?
 - a. an increase in the price of crude oil
 - b. a decrease in the price of automobiles
 - c. a decrease in the income of consumers
 - d. an increase in taxes on gasoline products
6. In a competitive market, the price of shoes is likely to be increased by:
 - a. a decrease in the supply of shoes
 - b. a decrease in the demand for shoes
 - c. more capital investment in shoe factories
 - d. new machines reducing the cost of shoe production
7. What is meant by the statement, “Resources are scarce”?
 - a. Resources are hard to find.
 - b. Resources are limited relative to human wants.
 - c. Nobody owns resources.
 - d. Resources must be produced.
8. When economists say, “There is no such thing as a free lunch,” they are referring to the fact that:
 - a. costs increase instead of remaining constant
 - b. everything has a cost
 - c. efficiency today might lead to reduced growth in the future
 - d. tradeoffs are necessary in order to eliminate scarcity
9. Some people in the United States are very wealthy, while some people are very poor. This statement reflects the way in which the U.S. economy has answered which of the following basic economic questions?
 - a. for whom to produce
 - b. how to produce
 - c. how much to produce
 - d. what to produce
10. Which of the following is a **true** statement about economic and socioeconomic goals?
 - a. There is less agreement about which socioeconomic goals are desirable.
 - b. There is more agreement about which socioeconomic goals are desirable.

- c. Socioeconomic goals are easier to attain.
 - d. Socioeconomic goals are more difficult to attain.
11. Which types of economic systems must contend with the three basic economic problems of what, how, and for whom to produce?
 - a. market economies
 - b. centrally directed economies
 - c. traditional economies
 - d. all of the above
 12. An economic system primarily dependent upon the actions of independent buyers and sellers is called a:
 - a. market economy
 - b. free enterprise economy
 - c. capitalist economy
 - d. all of the above
 13. When goods that people want are in short supply, market economies ration the available goods by _____ and command economies ration them by _____.
 - a. “first come, first served”; government orders
 - b. adjusting prices; adjusting prices
 - c. adjusting prices; making people wait in lines
 - d. making people wait in lines; government orders
 14. A centrally directed economy differs from a market economy:
 - a. in the types of economic decisions that must be made
 - b. in the degree of interdependence in the economy
 - c. in the way that economic decisions are made
 - d. all of the above
 15. What do capitalistic economies depend upon for the allocation of resources and finished products?
 - a. central agencies
 - b. the price system
 - c. tradition
 - d. state and local governments
 16. A market economy uses the price system to answer which of the basic economic questions?
 - a. for whom to produce
 - b. what to produce
 - c. how to produce
 - d. all of the above
 17. Which of the following must exist in order for a market economy to work?
 - a. People must follow their self interest.
 - b. People must be motivated to make a profit.
 - c. People must be free to buy and sell as they choose.
 - d. all of the above
 18. Which is a *false* statement about a market economy?
 - a. A decrease in price generally results in a decrease in production.
 - b. A rise in price is generally an incentive to produce more.
 - c. Goods and services in short supply are rationed on the equitable basis of “first come, first served.”
 - d. Different sellers must compete with one another to sell their goods to consumers.
 19. One socioeconomic goal that must be achieved in order for a market economy to work well is:

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- a. an equitable distribution of income
 - b. job security for workers
 - c. economic freedom for people to choose what they want to buy and sell
 - d. full employment
20. Why are butchers motivated to produce hamburger in a market economy?
- a. because consumers like hamburgers
 - b. because butchers have always produced hamburgers
 - c. because butchers can make profits by selling hamburger
 - d. because government regulations require a certain amount of hamburger to be made
21. In what way does a market economy provide answers to the three basic economic questions?
- a. through collective decision making by buyers and sellers
 - b. through government directives to buyers and sellers
 - c. through the actions of individual buyers and sellers motivated to do what is best for society
 - d. through the actions of individual buyers and sellers motivated to do what is best for themselves
22. The lure of profits determines what gets produced in which kind of economic system?
- a. a market economy
 - b. a traditional economy
 - c. a command economy
 - d. all of the above
23. Why are goods and services produced in a market economy?
- a. because people need goods and services
 - b. because people have unlimited wants for goods and services
 - c. because people want to make profits for themselves
 - d. because of tradition and institutions
24. In a market economy, the opportunity to make a profit for providing a good or service is called
- a. an inducement
 - b. a reinforcement
 - c. an incentive
 - d. a motive
25. How does a market system resolve the problem of shortages?
- a. Shortages will result in higher prices, which will provide an incentive for more production.
 - b. Shortages will result in lower prices, which provide an incentive for consumers to buy other goods not in short supply.
 - c. Shortages of one good will always be balanced by surplus supplies of other goods.
 - d. Goods are rationed equitably by “first come, first served.”
26. The price at which buyers are just willing to buy the same amount that sellers are willing to sell is called
- a. the just price
 - b. the balanced price
 - c. the equilibrium price
 - d. the going price
27. If the price of oranges is below the equilibrium price, then which of the following is a *true* statement?
- a. There will be a surplus of oranges, and the price of oranges will fall.
 - b. There will be a surplus of oranges, and the price of oranges will increase.
 - c. There will be a shortage of oranges, and the price of oranges will fall.
 - d. There will be a shortage of oranges, and the price of oranges will increase.
28. If the price of beef is above the equilibrium price, then which of the following is a *true* statement?

- a. There will be a surplus of beef, and the price of beef will fall.
 - b. There will be a surplus of beef, and the price of beef will increase.
 - c. There will be a shortage of beef, and the price of beef will fall.
 - d. There will be a shortage of beef, and the price of beef will increase.
29. Which of the following is a *true* statement?
- a. A freely competitive market will result in either surpluses or shortages unless government price controls are used.
 - b. In a freely competitive market, prices will adjust to remove surpluses or shortages.
 - c. When the price of a product is too high, shortages will result.
 - d. The only way to eliminate surpluses is to allow prices to increase to equilibrium.
30. Many city governments impose rent controls on apartment owners, keeping the price of an apartment below the equilibrium price. Which of the following will result from the policy of rent control?
- a. a surplus of apartments
 - b. a shortage of apartments
 - c. a decrease in the demand for apartments
 - d. an increase in the supply of apartments
31. An important characteristic of an equilibrium price is that it:
- a. maximizes profits
 - b. increases surpluses
 - c. clears the market
 - d. does not depend on supply or demand
32. Which of the following causes competitive markets to move toward an equilibrium price?
- a. supply changing to meet demand
 - b. consumers switching to complements and substitutes in reaction to price changes
 - c. government price controls
 - d. buyers and sellers reacting to shortages and surpluses
33. The author of *The Wealth of Nations* was:
- a. Milton Friedman
 - b. Adam Smith
 - c. Karl Marx
 - d. Alexander Hamilton

Test for *The Invisible Hand*

Teacher's Answer Key

The following questions are taken from William B. Walstad and Ken Rebek, *Test of Economic Literacy* (3rd edition) 1987. NY: National Council of Economics Education.

1. Business firms wish to sell their products at high prices. Households wish to buy products at low prices. In a market economy this conflict of interest is resolved by:
 - a. lawsuits
 - b. government
 - c. **competition**
 - d. collective bargaining
2. A newspaper reports that the price of gasoline increased and the quantity sold decreased. In a competitive market, this situation would most likely be the result of:
 - a. an increase in demand

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- b. an increase in supply
 - c. a decrease in demand
 - d. **a decrease in supply**
3. Why do medical doctors generally earn more than farmers?
- a. Medical doctors are more efficient than farmers.
 - b. Medical doctors provide a service rather than make a product.
 - c. There are fewer medical doctors than farmers in our economy.
 - d. **Medical doctors are scarcer, given the demand for their services.**
4. In a competitive market, the price of a product is \$5.00. If the government passes a law that sets a minimum price of the product at \$6.00, this change will result in:
- a. **a surplus of the product**
 - b. a shortage of the product
 - c. a decrease in the supply of the product
 - d. an increase in the demand for the product
5. Which would most likely increase the quantity of gasoline sold in a competitive market?
- a. an increase in the price of crude oil
 - b. **a decrease in the price of automobiles**
 - c. a decrease in the income of consumers
 - d. an increase in taxes on gasoline products
6. In a competitive market, the price of shoes is likely to be increased by:
- a. **a decrease in the supply of shoes**
 - b. a decrease in the demand for shoes
 - c. more capital investment in shoe factories
 - d. new machines reducing the cost of shoe production

The following questions are from Matthew Martin, Turley Mings and Diane Swanson, *Teaching and Testing from the Study of Economics: Principles, Concepts and Applications (5th edition) 1995. Guilford, Connecticut: Dushkin Publishing Group/Brown and Benchmark Publishers.*

7. What is meant by the statement, “Resources are scarce”?
- a. Resources are hard to find.
 - b. **Resources are limited relative to human wants.**
 - c. Nobody owns resources.
 - d. Resources must be produced.
8. When economists say, “There is no such thing as a free lunch,” they are referring to the fact that:
- a. costs increase instead of remaining constant
 - b. **everything has a cost**
 - c. efficiency today might lead to reduced growth in the future
 - d. tradeoffs are necessary in order to eliminate scarcity
9. Some people in the United States are very wealthy, while some people are very poor. This statement reflects the way in which the U.S. economy has answered which of the following basic economic questions?
- a. **for whom to produce**
 - b. how to produce
 - c. how much to produce
 - d. what to produce
10. Which of the following is a *true* statement about economic and socioeconomic goals?
- a. **There is less agreement about which socioeconomic goals are desirable.**
 - b. There is more agreement about which socioeconomic goals are desirable.

- c. Socioeconomic goals are easier to attain.
 - d. Socioeconomic goals are more difficult to attain.
11. Which types of economic systems must contend with the three basic economic problems of what, how, and for whom to produce?
- a. market economies
 - b. centrally directed economies
 - c. traditional economies
 - d. **all of the above**
12. An economic system primarily dependent upon the actions of independent buyers and sellers is called a:
- a. market economy
 - b. free enterprise economy
 - c. capitalist economy
 - d. **all of the above**
13. When goods that people want are in short supply, market economies ration the available goods by _____ and command economies ration them by _____.
- a. “first come, first served”; government orders
 - b. adjusting prices; adjusting prices
 - c. **adjusting prices; making people wait in lines**
 - d. making people wait in lines; government orders
14. A centrally directed economy differs from a market economy:
- a. in the types of economic decisions that must be made
 - b. in the degree of interdependence in the economy
 - c. **in the way that economic decisions are made**
 - d. all of the above
15. What do capitalistic economies depend upon for the allocation of resources and finished products?
- a. central agencies
 - b. **the price system**
 - c. tradition
 - d. state and local governments
16. A market economy uses the price system to answer which of the basic economic questions?
- a. for whom to produce
 - b. what to produce
 - c. how to produce
 - d. **all of the above**
17. Which of the following must exist in order for a market economy to work?
- a. People must follow their self interest.
 - b. People must be motivated to make a profit.
 - c. People must be free to buy and sell as they choose.
 - d. **all of the above**
18. Which is a *false* statement about a market economy?
- a. A decrease in price generally results in a decrease in production.
 - b. A rise in price is generally an incentive to produce more.
 - c. **Goods and services in short supply are rationed on the equitable basis of “first come, first served.”**
 - d. Different sellers must compete with one another to sell their goods to consumers.
19. One socioeconomic goal that must be achieved in order for a market economy to work well is:

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- a. an equitable distribution of income
 - b. job security for workers
 - c. **economic freedom for people to choose what they want to buy and sell**
 - d. full employment
20. Why are butchers motivated to produce hamburger in a market economy?
- a. because consumers like hamburgers
 - b. because butchers have always produced hamburgers
 - c. **because butchers can make profits by selling hamburger**
 - d. because government regulations require a certain amount of hamburger to be made
21. In what way does a market economy provide answers to the three basic economic questions?
- a. through collective decision making by buyers and sellers
 - b. through government directives to buyers and sellers
 - c. through the actions of individual buyers and sellers motivated to do what is best for society
 - d. **through the actions of individual buyers and sellers motivated to do what is best for themselves**
22. The lure of profits determines what gets produced in which kind of economic system?
- a. **a market economy**
 - b. a traditional economy
 - c. a command economy
 - d. all of the above
23. Why are goods and services produced in a market economy?
- a. because people need goods and services
 - b. because people have unlimited wants for goods and services
 - c. **because people want to make profits for themselves**
 - d. because of tradition and institutions
24. In a market economy, the opportunity to make a profit for providing a good or service is called
- a. an inducement
 - b. a reinforcement
 - c. **an incentive**
 - d. a motive
25. How does a market system resolve the problem of shortages?
- a. **Shortages will result in higher prices, which will provide an incentive for more production.**
 - b. Shortages will result in lower prices, which provide an incentive for consumers to buy other goods not in short supply.
 - c. Shortages of one good will always be balanced by surplus supplies of other goods.
 - d. Goods are rationed equitably by “first come, first served.”
26. The price at which buyers are just willing to buy the same amount that sellers are willing to sell is called
- a. the just price
 - b. the balanced price
 - c. **the equilibrium price**
 - d. the going price
27. If the price of oranges is below the equilibrium price, then which of the following is a *true* statement?
- a. There will be a surplus of oranges, and the price of oranges will fall.
 - b. There will be a surplus of oranges, and the price of oranges will increase.
 - c. There will be a shortage of oranges, and the price of oranges will fall.
 - d. **There will be a shortage of oranges, and the price of oranges will increase.**
28. If the price of beef is above the equilibrium price, then which of the following is a *true* statement?

- a. **There will be a surplus of beef, and the price of beef will fall.**
 - b. There will be a surplus of beef, and the price of beef will increase.
 - c. There will be a shortage of beef, and the price of beef will fall.
 - d. There will be a shortage of beef, and the price of beef will increase.
29. Which of the following is a *true* statement?
- a. A freely competitive market will result in either surpluses or shortages unless government price controls are used.
 - b. **In a freely competitive market, prices will adjust to remove surpluses or shortages.**
 - c. When the price of a product is too high, shortages will result.
 - d. The only way to eliminate surpluses is to allow prices to increase to equilibrium.
30. Many city governments impose rent controls on apartment owners, keeping the price of an apartment below the equilibrium price. Which of the following will result from the policy of rent control?
- a. a surplus of apartments
 - b. **a shortage of apartments**
 - c. a decrease in the demand for apartments
 - d. an increase in the supply of apartments
31. An important characteristic of an equilibrium price is that it:
- a. maximizes profits
 - b. increases surpluses
 - c. **clears the market**
 - d. does not depend on supply or demand
32. Which of the following causes competitive markets to move toward an equilibrium price?
- a. supply changing to meet demand
 - b. consumers switching to complements and substitutes in reaction to price changes
 - c. government price controls
 - d. **buyers and sellers reacting to shortages and surpluses**
33. The author of *The Wealth of Nations* was:
- a. Milton Friedman
 - b. **Adam Smith**
 - c. Karl Marx
 - d. Alexander Hamilton

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

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BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

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CHAPTER 5

Monopoly's Might

CHAPTER OUTLINE

5.1 MONOPOLY'S MIGHT

5.1 Monopoly's Might



Unit Overview

Time Required

6-7 hours of class time

Project Scenario

In a free market economy, competition and monopoly have advantages and disadvantages. As firms enter a competitive market, price falls and the amount of goods available increases. When a monopoly is established, the quantity of goods in the market as a whole decreases, and price increases over the equilibrium price set in a competitive market. However, the promise of economic profit created by monopoly power provides an incentive to innovate, which can lead to new discoveries and improved goods and services. Monopolies, then, have some positive effects as well as some that could be perceived as negative — especially by other firms driven from the market or consumers fearing higher prices and fewer choices.

High school student entrepreneurs in a School-Based Enterprise (SBE) have developed, produced, and marketed an avocado with fewer calories than other avocados. Their faculty advisor alerts them to the need to expand production given the possibility of competition from other firms. During the course of the next three years, students analyze data on sales, revenue, costs and profits to help them convince a venture capitalist to invest in their SBE, then to fund research and development for a much-needed pesticide. Finally, after becoming a monopoly with a patent for the pesticide, the SBE is bought out by a large corporation. Students face an ethical dilemma — should they become employees of the monopoly or not — and must write a position paper and debate the pros and cons of competition and monopolies in a free market economy.

Concepts to Be Learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- **Barrier to Entry**
- **Competition**
- **Corporation**
- **Demand (Change in and Quantity)**
- **Demand**
- **Entrepreneur**
- **Equilibrium Price**

- **Equilibrium Quantity**
- **Market**
- **Market Economy**
- **Monopoly**
- **Opportunity Cost**
- **Patent**
- **Price**
- **Profit**
- **Scarcity**
- **Supply (Change in and Quantity Supplied)**
- **Tradeoff**

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- **Corporation**
- **Economies of Scale**
- **Industry**

Placement In Curriculum

Monopoly's Might is designed to be the third *Project Based Economics* unit students complete. This unit is designed to teach students about entrepreneurship and the effects of competition and monopoly on price, output, and profit. Prior to undertaking this project, students should be familiar with the concepts learned in **Running in Place** and **The Invisible Hand**.

Sequence and Key Content of PBE Units

Essential Units:

- a. **Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- b. **The Invisible Hand** – free markets and supply incentives
- c. **Monopoly's Might** – competitive markets and supply/demand forces within them
- d. **The Greater Good** – comparative advantage and free trade
- e. **The President's Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)

NCEE Content Standards Addressed

Monopoly's Might is intended to be taught throughout the United States and, as appropriate, in other English-speaking countries. Teachers can use it to address the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education in partnership with the National Association of Economic Educators and the Foundation for Teaching economics. For more information see www.ncee.net/ea/standards.

TABLE 5.1:

Standard #	Economic Concept
1	Scarcity

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TABLE 5.1: (continued)

Standard #	Economic Concept
2	Opportunity Cost
3	Market Systems (allocation of goods & services)
4	Economic Incentives (prices, wages, profits, taxes, etc.)
7	Market Economies
8	Supply & Demand
9	Effects of Competition
14	Entrepreneurs

Project Based Learning and Project Based Teaching

Definition of PBL

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

Components of Project Based Economics Units

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”
- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The Driving Question is written in a way that focuses students on the exact problem they need to resolve. The **Driving Question** is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class’ unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are *not* economic terms — may also be defined on the spot, if necessary for understanding.

NOTE: The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as

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charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CD-ROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity.

In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- **Notes to the Teacher:** At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.

- Arrange for peers to check each others' understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer's if they have swapped and read each other's logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
 - Talking with certain students or groups to address their misconceptions and misunderstandings
 - Giving additional textbook reading assignments, and/or directing students to online resources and explanations
 - Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the

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time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Maximizing the Effectiveness of Project Based Teaching

- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not

just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE* unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.
- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching Monopoly’s Might

Sequence of the Unit

Like the other BIE *Project Based Economics* Units, students complete **Monopoly’s Might** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is Logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible — at least during the first several times **Monopoly’s Might** is taught. Each instructional activity is discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

5.1. MONOPOLY’S MIGHT

Launching the Project

1. Students receive the **first memo from Ronnie Johnson, with 2008-2009 production data tables**, and discuss it as a whole class.

Framing the Inquiry

2. Students develop the **initial “know” list** with the teacher (whole-class discussion).
3. Students develop the **initial Driving Question** with the teacher (whole-class discussion).
4. Students develop the **initial “need to know” list** with the teacher (whole-class discussion).

Problem-Solving and Learning Activities

5. Teacher guides students in analyzing **2008-2009 production data tables** (whole-class discussion).
6. Teacher gives **clarifying lesson #1** on *demand*.
7. Students individually write **first Project Log entry**.
8. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
9. Students **write summaries and present “elevator talk”** to venture capitalist (in small groups).
10. Students receive **second memo from Ronnie Johnson and 2009-2010 production data tables** (whole-class discussion).
11. Students **revise Driving Question** (whole-class discussion).
12. Students **revise the know/need to know list** with the teacher (whole-class discussion).
13. Teacher gives **clarifying lesson #2** on *competition*.
14. Students individually write **second Project Log entry**.
15. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
16. Students plan and make **two-minute presentation to venture capitalist** (in small groups).
17. Students receive **final memo from Ronnie Johnson and 2010 production data tables** (wholeclass discussion).
18. Students finalize the Driving Question with the teacher (whole-class discussion).
19. Students finalize the know/need to know list with the teacher (whole-class discussion).
20. Teacher gives clarifying lesson # 3 on *monopolies*.
21. Students write final Project Log entry.
22. Teacher reviews individual Project Log entries to assess understanding of economic concepts.
23. Teacher shares supplied rubric with students to guide their work (whole-class discussion).

Presentation, Assessment and Debrief

24. Students write **position paper on joining a monopoly** (as individuals).
25. Students prepare their arguments and **debate the ethics of monopolies**.
26. Teacher uses **supplied scoring guide to assess** position papers.
27. Teacher conducts **debrief to clarify and consolidate** students’ understanding of key economic concepts.
28. Teacher manages **student reflection** on the 21st century skills practiced and the process of learning in PBL.
29. Teacher uses supplied **multiple-choice test** to assess individual students’ understanding of key economic concepts.
30. Teacher makes notes on **adjustments to the unit** to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

0. **Teacher prepares for successful project implementation.**

There are a number of issues that must be considered before embarking on a problem with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance?
- Do all students have the basic skills (i.e. non-economics-content, such as reading, working in groups, etc.) they need to tackle the project? If not, is it necessary to pre-teach some of these skills, establish student mentor relationships, or deal with these challenges in other ways?
- How will student groups be formed?
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

Launching the Project

1. **Students receive Entry Document, the first memo from Ronnie Johnson, with attached 2008-2009 production data tables, and discuss it as a whole class.**

The first memo from Ronnie Johnson and 2008-2009 production data tables may be found in Section IV, *Student Materials*.

Have students *only focus on the memo* at this point — save the data tables for later (you may hand them out separately if you wish). Ask one or more students to read aloud the Entry Document while the whole class focuses on it.

The memo can be projected so it can be read by the whole class. Alternatively, copies of the memo can be duplicated and passed out to students, or viewed online as an email or document posted to a website.

Potential Hurdle: As this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of memo: Faculty advisor Ronnie Johnson’s first memo congratulates his students in Avocado High School’s School-Based Enterprise (SBE) for receiving an award from the Secretary of the U.S. Department of Education. Johnson notes the need to expand production and profits and asks students to prepare a one-minute “elevator talk” to a venture capitalist. They will need to explain “the economics behind our prices, costs, and profits over the past two years,” and to “predict revenue and profit for the next year.” Students are cautioned that “venture capitalists have strong backgrounds in economics and will expect your explanations to be grounded in demand and supply.”

Economics Content Note: The memo contains a number of economic terms (demand, competition, production, profits). It is assumed that students will either not fully understand these terms or have misconceptions regarding their meanings. **Do not**, at this point, explain to students the meaning of these terms. This is something they must do for themselves (with the teacher’s monitoring and guidance) once they begin working to solve the problem.

Framing the Inquiry

2. **Students develop the initial “know” list with the teacher (whole-class discussion).**

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the

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information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the first “know” list follows.

Example of Initial Know List

What do we know?

- We belong to a School-Based Enterprise
- We produce and sell low-calorie avocados
- Ronnie Johnson is our faculty advisor
- We want profits to pay for scholarships
- We got a national award from the U.S. Secretary of Education
- Our goal is to expand profit
- We are the first in the market (we created it)
- Increased demand for low-fat avocados increased our profit
- We need money from a venture capitalist to build more facilities
- Venture capitalists don’t usually meet with high school students
- We have one minute in an elevator to convince a venture capitalist that we’re profitable
- We need to write a summary before giving our elevator talk

3. Students develop the initial Driving Question (whole-class discussion).

After students have discussed the memo from Ronnie Johnson, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion.

A Driving Question is a succinct declaration of the general problem students are to solve. It takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial statement may look something like:

How can we, as **students at Avocado High School’s SBE**, write and present a **one-minute summary explaining our prices, costs, and profits**, so that a **venture capitalist will give us the money to increase production and profits?**

At this point, it is fine to keep the Driving Question ill-defined. It is not necessary for the Driving Question to contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the scenario unfold.

4. Students develop the initial need to know list with the teacher (whole-class discussion)

Students must now assess what they already know about the problem posed in the Driving Question. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the Driving Question and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Driving Question provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Review the need to know list soon after it is written and think about how you will answer students' questions. Some may be answered right away, or while coaching small groups. Some will require a more formal clarifying lesson for the whole class. Other questions will be answered through independent research and thought by students. As the problem unfolds, coach students to see that some "needs to know" will never be answered and are not actually necessary for developing a reasonable solution to the problem.

Although each class generally produces a unique Know/Need to Know List, an example of the type of items that might appear on the first need to know list follows. *Remember, this should only be drawn from the memo, not the data tables, at this point.*

Example of Initial Need to Know List

What do we need to know?

- What is an avocado?
- What is "revenue"?
- How much money are we going to make?
- How long does it take to grow an avocado?
- Why is the school named AHS?
- What's the U.S. Department of Education?
- Does the taste of low-calorie and regular avocados differ?
- Can we get a patent?
- Are we growing the product on campus?
- How much profit do we need to fund scholarships?
- How big is the market for a low-calorie avocado?
- Do students get paid for this?
- What makes us profitable?
- Will we have competitors?
- Is our profit enough?
- What percent of profit will venture capitalists take?
- Why do costs change?
- How can we summarize this and convince the venture capitalist in only one minute
- Will the venture capitalist want to be bothered in the elevator?

Problem-Solving and Learning Activities

5. Teacher guides students in analyzing 2008-2009 production data tables (as a whole class).

To create the summary and the elevator talk, students first must analyze the tables that accompany Ronnie Johnson's memo. Although the memo tells the students that profits have increased dramatically with the increase in demand for avocados, the attached tables show the numerical basis for this statement. Each table provides students with benchmark data on price, quantity, and cost. One table shows the quarterly data for 2008 and one shows data for 2007. Both the 2008 and 2009 tables should be used as information to help guide students toward gaining knowledge of how price and quantity are determined in markets.

Potential Hurdle: Start analyzing these tables with students by walking them carefully through what is shown on each table. Do not go too fast or let the quickest students jump to conclusions before other students have had a chance to think. To prevent confusion, have students look only at the tables for one year before moving to the next year. Ask questions — again allowing time for *all* students to think — to guide the class in understanding what the data show.

- How does the quantity of avocados sold vary with the price?
- How did demand for avocados change between 2008 and 2009?
- How did the demand change between 2008 and 2009 affect profit?

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Economics Content Note: The information in the tables can be used in a number of ways.

Information on sales can be used to illustrate a demand curve — how the quantity demanded for avocados varies with price. Charts constructed (or those provided) can be used to show growth in demand for avocados between 2008 and 2009 (as shown in increased quantity sold at a given price — at \$.89 the sales went from 100 thousand in 2008 to 200 thousand in 2009) and how (for example) profit increased with increased demand and stable costs. Students should be challenged to describe the changes that occur over time in order to help them gain a perspective on revenue, sales, costs, and profit.

The charts also show that costs vary over the course of the year, as they do in farming (e.g., natural harvesting occurs once a year with more expensive hydroponics or greenhouse gardening techniques used to harvest avocados the rest of the year). Students should not worry about why the costs vary. Instead they should realize that variations in the cost of production produce variations in prices. When production costs are higher (in the first and fourth quarter) prices are higher and when costs are lower (third quarter), prices are lower.

Students should be coached to think about why costs (and hence price) fluctuate between the quarters. They should be able to identify such reasons as: 1. the ripening season affects the cost of producing an avocado (i.e., it's cheaper to get avocados during their natural ripening season than in other seasons), 2. bugs are more prevalent in some seasons than others (thus money must be spent to exterminate them), and 3. trees freeze in the colder months (thus incurring costs to prevent this). These forces of nature mean that the costs are higher in the first and fourth quarter and lowest during harvest (third quarter).

Students should calculate total revenue, total cost, and profit in each quarter using the information provided in the table. Total revenue is simply the price times quantity in the sales grid. Total cost is per unit cost (“cost” in the tables) times sales, and profit is total revenue minus total cost.

Perhaps the easiest way for students to follow market processes is to chart profit, price, costs, and sales over time. Line and bar charts showing activities during all four years are provided in Section III, *Student Materials*. Students can construct these charts as they proceed through the unit either by plotting points from each memo as it is received or as a summary using the last memo to show trends.

6. Teacher gives clarifying lesson # 1 on demand.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: In this lesson emphasize the following principles, concepts, and processes:

- The relationship between total revenue and price
- The relationship between total revenue, total cost, and profit
- The opportunity cost of producing avocados
- The incentives created by profit
- How a competitive market adjusts to an increase in demand the long term

7. Students individually write first Project Log entry, answering the following questions:

How would producing a low-calorie avocado change the demand for avocados? What impact would this change have on the market for avocados?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

Potential Hurdle: The charts also show that costs vary over the course of the year, as they do in farming (e.g., natural harvesting occurs once a year with more expensive hydroponics or greenhouse gardening techniques used to harvest avocados the rest of the year). Students should not get hung up on why the costs vary. Instead they should

realize that variations in the cost of production produce variations in prices. When production costs are higher (in the first and fourth quarter) prices are higher and when costs are lower (third quarter), prices are lower.

8. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: The Project Log is designed to ensure that students understand the market processes that accompany a change in demand. Students should be able to see that the introduction of the low-calorie avocado will increase the demand for avocados. The increase in demand will increase the quantity sold *at any given price* but, more importantly, will push up price. This process can be described in words (i.e., increase in demand means more people want the avocados and some people will pay a higher price to obtain them), through graphs (i.e., a shifting outward of the demand curve), or in the tables provided (i.e., at \$0.89 100 avocados are sold prior to the introduction of the low-calorie avocado; afterwards 200 are sold).

9. Students write summaries and present “elevator talk” to venture capitalist (in small groups or pairs).

Once you are sure all students are ready, tell them it’s time to write their summaries and plan their elevator talks. Form students into groups of three or at most four (or pairs, if you have a small class). Allow them time to write a summary of what the data show about prices, costs, and profits in the low-calorie avocado market, then plan how to present this in one minute. You may tell students that everyone in the group or pair is required to speak for part of the time, or you could tell them you will randomly select one student from each group to speak for the whole minute.

When presenting the elevator talks, have each individual, pair, or group come up to the front of the class. The teacher, or another adult who has been prepared, could play the role of the venture capitalist, and may react or ask very brief questions but otherwise not interfere with the presentation. You can enhance this exercise by simulating an actual elevator using tape on the floor, a cardboard refrigerator box, or curtains. To keep the problem’s scenario realistic, it is extremely important that students are held to a one-minute presentation. Use a stopwatch or timer — adding a “ding” sound effect when the elevator doors open and the venture capitalist exits.

After the talks are presented, collect the summaries if you wish to assign credit or grade them.

10. Students read second memo from Ronnie Johnson and analyze the accompanying 2010 production data tables (as a whole group).

The second memo from Ronnie Johnson and 2010 production data tables may be found in Section IV, *Student Materials*.

Synopsis of second memo: The second memo informs students that SBEs at three other high schools — Buchanan, Fillmore, and Pierce — are now producing and selling similar avocados. The memo points out that, while consumers appreciate the lower prices and increased availability of avocados, the entrance of new producers into the market causes profit for the SBE at AHS to fall, even though sales are still robust. The tables accompanying the second memo show the drop in prices and profits in 2010. Additionally, a mite that destroys avocado trees is threatening their crop. Students are told they will have two minutes to make another presentation to the venture capitalist. They need to explain why profits have fallen but also why they should get further investment to help develop a method for getting rid of the mites.

Economics Content Note: The 2010 tables should be used to illustrate how prices, profits, sales, and revenue change when competition increases. While sales are reduced for the SBE, they are increased in the market overall (remember that four firms now produce avocados). For AHS, the amount sold is stable, even if costs still fluctuate. Of course, the reductions in sales and price (from increased competition) decrease the SBE’s total revenue and profits. In fact, in the first and fourth quarters — when costs are highest — profits are negative, although the school still has positive profits if viewed over a year-long period. The charts illustrate the total growth in market sales and the fall in profits

and prices between 2009 and 2010, when new firms entered the market. Now is a good time to discuss profits in a free market economy. Students should understand that economic profits are zero in a competitive market, although firms receive a normal profit.

Potential Hurdle: Students may be frustrated because they have no decisions to make. Rather, external events create changes and students merely react to those changes. This effect is intentional. This frustration reflects what happens in a market economy, in which prices fluctuate as firms enter and exit. The firms remaining in the market react to the price changes by altering production — as our SBE is trying to do with additional dollars from venture capitalists. Students should be coached to see that the drop in price and profits stems from the entrance of firms into the market.

11. **Students revise Driving Question with the teacher (whole-class discussion).**

Students should revise their Driving Question at this point. The new Driving Question should resemble:

How can we, as **students at AHS**, prove **we will be profitable in the competitive market**, so that **venture capitalists will give us the money we need to develop a method for getting rid of the mites?**

12. **Students revise the know/need to know list with the teacher (whole-class discussion).**

The additional information gained from the second memo and accompanying tables can be used to revise the know and need to know lists. The revised lists could include:

What do we know?

- *(previously listed item).*
- Competitive forces mean no (little) profit
- We still need venture capital money
- We must show why changes have occurred
- We have a mite problem
- Our Biochemistry Club needs money so they can develop a way to get rid of the mites
- Price stays at \$0.79
- Profits have fallen
- Costs are the same as before
- We have to make a two-minute presentation to a venture capitalist

What do we need to know?

- *(previously listed items)*
- How did the other schools suddenly develop the low-calorie avocado (was there a spy, or did one of us sell out?)
- How can we get profit to increase in competitive markets?
- Why don't firms in competition make a profit?
- Why is the price not changing?
- Why are costs the same?
- Are perseas mites really a threat to avocado trees?
- Is this the same venture capitalist?
- How do we make the presentation?

13. **Teacher gives clarifying lesson # 2 on competition.**

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* and *Lectures* in Section V for background information for this lesson.

Economics Content Note: In this lesson emphasize the following economic processes:

- Characteristics of a competitive market
- Outcomes from a competitive market
- Processes that lead to the outcomes of competitive markets
- How firms respond to profit and losses in an industry
- The advantages and disadvantages of competitive markets.

14. Students individually write second Project Log entry, answering the following question:

How (and why) did price, profit, and quantity produced change with competition? Draw the changes from 2009-2010 on a supply/demand graph.

15. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

As with the previous Project Log entry, the teacher should use the Project Log to assess students’ understanding of the forces that change prices and profit. Because all students must know about price setting in a market economy before continuing through the unit, check to see how well students understand these basic economic principles.

Economics Content Note: This Project Log is designed to determine if students understand the nature of and outcomes from a competitive market. While students should have a general understanding of how competitive markets work from *Running in Place* and *The Invisible Hand*, this unit takes that learning deeper. It builds students’ knowledge of the characteristics that underlie the processes learned in earlier units and adds a dynamic element to those processes: the entry and exit of firms from markets in response to profits and losses. This Project Log has two purposes. First, it will reveal if students have mastered the material learned in the previous units (i.e., fluctuations in price with changes in demand or supply). Second, it will reveal if students have built on that knowledge and understand the conditions under which competitive forces lead to the processes described in earlier units and have deepened their understanding of markets so that they now understand how firms respond to the profit incentive.

16. Students plan and make a two-minute presentation to venture capitalists (in small groups).

Keep students in the same groups as before or, if they were in pairs, combine them into groups of four.

Each small group of students should use information from the memo and clarifying lesson to prepare their two-minute presentation. Once again the teacher, or another adult who has been prepared, should play the role of venture capitalist. To help engage students, the environment in which presentations are made should simulate a workplace. Have students wear professional attire (e.g., jeans would not be worn when asking for money). Other ideas include aligning desks to simulate a boardroom; creating “props” such as nameplates, memo pads and coffee cups; and having other students or outside audience members ask questions as additional “venture capitalists.”

Remember that the students are to *hold their presentation to two minutes*. Since they are ultimately to be successful in procuring money, you could inform them after their presentation that they have funding; but only offer this reward if the presentation is sound. Otherwise, have them come back the next day to answer more questions.

Economics Content Note: Students’ presentations should reveal an understanding of the role of prices and profit in the processes and outcomes of competitive markets. That is, students must use demand and supply forces (i.e., prices and profits) to demonstrate why prices, revenue, and profits changed over the years. This knowledge lies at the core of this unit and if students are not yet able to place the problem within this framework, clarifying lesson #2 should be revisited.

17. Students read third memo from Ronnie Johnson and analyze the accompanying 2011 production data tables(as a whole group).

The third memo from Ronnie Johnson and 2011 production data tables may be found in Section IV, *Student Materials*.

Synopsis of third memo: In this final memo, students learn that they hold patents for a pesticide and genetic engineering process, developed by the AHS Biochemistry Club, which eliminates the persea mites that damage avocado trees. Because Buchanan, Fillmore, and Pierce High Schools did not have access to the patented pesticide, production at their SBEs was halted by their persea mite infestation, leaving the SBE at AHS with a monopoly of the market. Students also learn that Mega Avocado Corporation (MAC) purchased patents from their school and has offered to make students Junior Executives in the company once they graduate from high school. Each student is asked to decide whether or not they want to accept MAC's offer. Additionally, their school principal wants them to debate the ethics of their decision at an assembly. Those students who decide to become Junior Executives are asked to write a position paper explaining why they think "monopoly profits are a just reward for innovation and efficiency gains." Students who want to decline the job are asked to write a position paper making an economic argument against monopolies.

Economics Content Note: The memo provides students with critical information that is needed to explain the tables. First, it tells students about the pesticide that eliminates the persea mite. By eliminating the mite, AHS costs fall dramatically (Table 4C). Second, it tells students about a patent that AHS has received. This patent leads to a monopoly, which will increase prices over competitive levels. In analyzing the charts, astute students may point out that price is actually lower than it was under competition. This question provides a wonderful "teachable moment" to explain how dramatically costs have fallen with the pesticide. Remind students that in competition, price would fall to the level of cost, which is now \$0.30. In a monopoly, price stands at \$0.69. It is this difference between price and per unit cost — profit — that exists in monopoly markets but will be eliminated with the entry of firms in competitive markets. Changes over the years that accompany changes in market forces and structures can be seen most dramatically in the charts showing all four years of data.

Potential Hurdle: Some students may want to know why AHS did not adopt an organic farming approach to the persea mite infestation. Although ladybugs can be used as natural predators to rid trees of the mite, the expense in using this approach is large and would greatly increase costs over those borne using the pesticides alongside genetic alteration.

18. Students finalize the Driving Question with the teacher (whole-class discussion).

Students should now write their final Driving Question. The final Driving Question should resemble:

How can we, as **students at AHS**, decide if **monopoly power is beneficial or not**, so that **we can write a position paper on our decision about becoming Junior Executives at MAC and debate the issue at an assembly?**

19. Students finalize the know/need to know list with the teacher (whole-class discussion).

The additional information gained from the second memo and accompanying tables can be used to revise the know and need to know lists. The revised lists could include:

What do we know?

- (previously listed items)
- The Biochemistry Club developed a pesticide and genetic-engineering process that kills persea mites
- AHS got a patent
- Our competitors' trees were destroyed
- We now have a monopoly with big profits
- Avocado prices are lower now
- Our total sales are up
- Our costs are down

- MAC bought our patent and offered to make us Junior Executives after we graduate
- We'll get a big salary and can get a college BA degree
- Mr. Johnson wants us to write a position paper explaining our decision about becoming Jr. Executives, using economic arguments
- Our principal wants us to debate the ethics of our decision at an assembly
- We have to explain whether we think monopoly profits are justified

What do we need to know?

- *(previously listed items)*
- What is a patent and how did we get one?
- What is a monopoly?
- What exactly will our salary be?
- Do we have to move to our new job?
- What are the arguments for and against a monopoly?
- What happened to Buchanan, Fillmore and Pierce High Schools?
- What are "ethics"?
- What will the debate be like? How long will it be?

20. Teacher gives clarifying lesson # 3 on monopolies.

A clarifying lesson should be used to help coach students toward knowledge about monopolies. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

The CD accompanying this unit contains an outline and PowerPoint slides for the mini-lecture, entitled *Monopolies*. As currently constructed, this mini-lecture is comprehensive. If your students already have some understanding of monopolies and their impact on markets, they may not need to see all the slides and hear the entire mini-lecture.

Economics Content Note: In this lesson make sure students see that:

- Monopolies increase price and profits by decreasing output of the good. These actions are made possible because entry into the market is restricted, in our case with patents.
- The incentive to create patents that block the entry of competing firms into the market is how the government stimulates innovation. Without patents, and resultant monopoly profits, less research and development, which leads to innovation, would occur.
- Monopoly prices are higher and output is lower than they would be in competitive markets where free entry into the market forces prices to their lowest possible level.

21. Students write final Project Log entry, answering the following question:

What happens to price, quantity, and profit when a competitive market becomes a monopoly market with a patent?

22. Teacher reviews individual Project Log entries to assess understanding.

For tips on reviewing Project Logs, see "Formative Assessments" in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: The Project Log is designed to determine if students understand monopoly markets. Furthermore, the Log should reveal whether or not students can reflect upon and express their understanding of competitive markets by comparing and contrasting processes and outcomes from the two types of markets. This knowledge is necessary in order for students to defend or oppose monopolies in their position paper.

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23. **Teacher shares supplied rubric with students to guide their work (whole-group discussion).**

A rubric for the position paper and debate may be found in “Assessment Tools” in Section V, *Teacher Materials*.

Give a copy of the rubric to each student, or display it on an overhead or computer projector so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their writing and debating skills, while important, are given less weight on the rubric. If you are altering the rubric’s point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Presentation, Assessment, and Debrief

24. **Students write position paper on joining a monopoly (as individuals).**

Have students individually write their position papers, following the guidelines in the final memo and the rubric. Remind students to stay focused on the pros and cons of monopolies from an economic point of view — not just to base their decision on the promise of a high-salaried job.

Potential Hurdle: Students may need help organizing their thinking about the benefits and costs of competitive and monopoly markets. To jump-start the thinking process, you could divide students into groups and have them create a two-column chart, listing the benefits of monopolies on one side and the benefits of competition on the other. You can then use their ideas as a springboard for a whole-class discussion of the benefits and costs of market economies.

Economics Content Note: This exercise is designed to show students that patents, which create monopolies, exist to provide an incentive for firms to undertake research and development (R#38;D). Without patents and the profit incentive provided by the monopoly that it grants, firms will not undertake costly R#38;D. Without the barriers to entry created by patents, any profits that a firm could reap (e.g. by the lower costs that the pesticide brings) will be eliminated because other firms (e.g., Buchanan, Fillmore and Pierce High Schools) could start producing low-calorie avocados using the pesticide AHS developed. As a result, the firm investing in R#38;D faces large investment costs without payoff since low prices would come with other firms using the innovation (i.e., competition would lower price as other firms used the pesticide). If firms had to bear large R#38;D costs for developing innovations and other firms could use the innovation without bearing these costs, few, if any, firms would engage in R#38;D. Patents provide the incentive to engage in R#38;D by granting firms a monopoly for the innovation. The potential for monopoly profits with a new innovation provides firms with an incentive to engage in R#38;D.

Of course, monopolists increase prices, decrease quantity, and increase profit over competitive markets, an outcome many believe is unjust. Many individuals argue that it is not fair for a monopolist to cut back on production and raise price because some individuals will not be able to purchase the good at the same time that individuals with a monopoly are making profit.

25. **Students prepare their arguments and debate the ethics of joining a monopoly.**

The debate can be handled in several ways, depending on how much time you want to take and what is best for your students:

- The class can be divided in half, either arbitrarily or consistent with their position paper, with one half preparing the pro-monopoly side and the other preparing the procompetition side.
- The class could be divided into two groups (which may not be exact halves) based on their position on the debate resolution, and informally present and discuss their views.
- Individuals with the strongest position papers could serve as the debate teams with the remaining students judging the debates.
- For a more formal, traditional debate, see the handout illustrating one typical debate procedure in Section V, *Teacher Materials*, “Lincoln-Douglas Style Debate Procedure.”

26. **Teacher uses supplied scoring guide to assess position papers and (optional) the debate.**

The rubric for the position paper and debate may be found in “Assessment Tools” in Section V, *Teacher Materials*.

As you read students’ position papers and listen to the debate, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

27. **Teacher conducts debrief to clarify and consolidate students’ understanding of key economic concepts.**

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students’ solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

Economics Content Note: This unit is designed to deepen students’ understanding of how competitive markets operate and to learn about monopoly markets. Students should finish the unit with a solid knowledge about market economies, as exemplified by competitive markets, and about how monopolies interfere with the forces that produce the efficiency and low prices of competitive markets. Critical to this understanding are the incentives provided by prices and profits *in all markets*. Students must understand how profit spurs entrepreneurship, how price and production are determined in competitive and monopoly markets, and the benefits and costs of government-created monopolies. Reinforcement of the concepts and principles that underlie these forces should occur during the debriefing. Corrections to erroneous economic logic must be made during the debriefing or students will internalize incorrect knowledge.

28. **Teacher manages student reflection on the 21st century skills practiced, and the process of learning in PBL.**

Students should have a chance to discuss the process of learning in PBL, and to reflect on their use of 21st century skills such as critical thinking, collaboration, and presentation. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible “right answers” to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?

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- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

29. **Teacher uses supplied multiple-choice test to assess individual students' knowledge of key economic concepts.**

The multiple-choice test for this unit may be found in “Assessment Tools” in Section V, *Teacher Materials*.

30. **Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.**

Teachers inevitably recognize how to make **Monopoly's Might** more effective after they have taught it. We encourage you to note these thoughts quickly, so you can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school Economics teachers. We include their advice below.

- It may appear this problem could be enhanced by making the numbers simpler or by reducing the reliance on the tables. Unfortunately, this is not the case. The numbers were carefully designed to illustrate pricing and production outcomes under competition and monopolies. Altering them may distort the presentation of market operation. Ignoring them would reduce most of the lesson's value, since it is the change in price and output that is at the heart of the unit.
- If time allows and you want students to practice debating skills, the debates can also be structured as round-robins. Groups can be paired for debates, with the winners advancing to the next round. This procedure continues until the final two teams debate. At this point the class can vote on the group who “wins” the debate.

Extensions to the Unit

- This unit is a good complement to a discussion of different types of economies. For example, the incentive to innovate in a market economy comes from profit. In a command economy, this incentive is missing.
- Teachers can easily integrate a lesson on Excel into this unit by replacing tables with worksheets (available at www.bie.org) to illustrate its ease in computations. Excel can also be used to help students predict future prices and production.

Student Materials

AVOCADO HIGH SCHOOL
Horace H. Hass, Principal



Memorandum

Date: January 15, 2010

To: School-Based Enterprise Students Avocado High School

From: Ronnie Johnson, Faculty Advisor

Subject: Congratulations on becoming “National SBE of the Year”

The award we recently received from the Secretary of the U.S. Department of Education is a source of pride for Avocado High School. It brings our School-Based Enterprise (SBE) much-deserved recognition for the hard work and entrepreneurial spirit that created the low-calorie avocado we now grow. People love avocados but want to watch their weight—two facts that have led to the profits we’re seeing as demand increases.

The Secretary hoped we would remain strong, despite the possibility of competition from other firms in the future. The Secretary suggested, and I agree, that we find ways to expand production and profits, so we can continue to fund college scholarships for students in the SBE. To do this, we must build additional facilities, but we need funding from venture capitalists. Venture capitalists, as you know, provide money to entrepreneurs who show the worth of their “venture.” Unfortunately, most venture capitalists will not meet with high school students. However, I have learned that the venture capitalist who is most likely to give us money leaves work promptly at 8:00 PM every night. If we take the elevator with her from her office to the parking garage, we will have about one minute to show her how much we know about the avocado market.

To prepare for this, please write a one-page summary that explains the economics behind our prices, costs, and profits over the past two years. I have attached two sets of tables, one each for 2008 and 2009, which track sales, revenue, profit, and cost numbers for each quarter. Venture capitalists will want to know why demand, prices, and profit changed between 2008, when we were still selling high-calorie avocados, and 2009, when we began selling the low-calorie avocado. As you know, most venture capitalists have strong backgrounds in economics and will expect your explanations to be grounded in demand and supply. They will also expect you to use this information to predict revenue and profit for next year.

Use your summary to develop a one-minute “talk” for the elevator ride. Be creative about how you could persuade her of the worth of our enterprise!

Production of Avocados at Avocado High Schol 2008-2009

Avocados

TABLE 5.2: Table 1A: Sales (in thousands), 2008

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	0	0	200	0
\$0.79	0	150	0	0
\$0.89	100	0	0	0
\$0.99	0	0	0	50
\$1.09	0	0	0	0

TABLE 5.3: Table 1B: Total Revenue (in thousands), 2008

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	0	0	\$138	0
\$0.79	0	\$118.5	0	0
\$0.89	\$89	0	0	0
\$0.99	0	0	0	\$49.5
\$1.09	0	0	0	0

5.1. MONOPOLY’S MIGHT

TABLE 5.4: Table 1C: Costs (per avocado), 2008

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.8	\$0.7	\$0.6	\$0.9

TABLE 5.5: Table 1D: Profit (in thousands), 2008

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$9	\$13.5	\$18	\$4.5

Low-calorie Avocados**TABLE 5.6: Table 2A: Sales (in thousands), 2009**

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	0	0	0	0
\$0.79	0	0	250	0
\$0.89	0	200	0	0
\$0.99	150	0	0	0
\$1.09	0	0	0	100

TABLE 5.7: Table 2B: Total Revenue (in thousands), 2009

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	0	0	0	0
\$0.79	0	0	\$197.5	0
\$0.89	0	\$178	0	0
\$0.99	\$148.5	0	0	0
\$1.09	0	0	0	\$109

TABLE 5.8: Table 2C: Costs (per avocado), 2009

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.8	\$0.7	\$0.6	\$0.9

TABLE 5.9: Table 2D: Profit (in thousands), 2009

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$28.5	\$38	\$47.5	\$19

Memorandum

Date: January 15, 2011

To: Avocado School-Based Enterprise Avocado High School

From: Ronnie Johnson, Faculty Advisor

Subject: Competitors in our market!

When I wrote you last year we had soaring profits and were seeking funding to expand production of our low calorie avocados. I wish the future could remain so rosy.

Our rivals on the football field—Buchanan High School, Fillmore High School, and Pierce Academy—noticed our soaring profits and began to grow and market similar avocados. Consumers enjoy the lower price of avocados that competition created. AHS, however, saw its profits fall, even though sales remained strong. The attached table provides all the data you need to see that our profits have dropped to nothing, since we could have made as much had we invested our money in the bank instead of growing avocados.

The increased competition could not have come at a worse time. That nasty bug that eats the leaves of the avocado tree—the dreaded persea mite—is starting to destroy our trees in much the same way the boll weevil worked its way through cotton crops in the South. Venture capitalists are now questioning whether our School-Based Enterprise will remain in the market. They argue that since other high schools have the same price and sales figures, our SBE will be forced out of business with too many producers in the market. They say our declining profits is evidence that our business will fold. Of course, we know that competition in market economies eliminates economic profit. But we believe that our rivals do not know about the persea mite and will fold due to their lack of preparation for the infestation. In the long run, our SBE will survive as we conquer the mite with our research.

Once again I must call on you to explain why our sales, revenue, and profit numbers are consistent with competition in market economies. Venture capitalists do not care about the mites, per se. They only care about profit and want to be assured that we will regain ours. We need their confidence, and their money, to finance the Biochemistry Club's research to develop a method for getting rid of the mite.

We have managed to squeeze in a two-minute meeting with the most promising venture capitalist tomorrow morning. Please develop a presentation about the economic viability of our firm despite declining profits.

PRODUCTION OF LOW - CALORIE ADVOCADOS AT AVOCADO HIGH SCHOOL 2010

TABLE 5.10: Table 3A: Sales (in thousands), 2010

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	0	0	0	0
\$0.79	120	120	120	120
\$0.89	0	0	0	0
\$0.99	0	0	0	0

TABLE 5.11: Table 3B: Total Revenue (in thousands), 2010

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	0	0	0	0
\$0.79	94.8	94.8	94.8	94.8
\$0.89	0	0	0	0
\$0.99	0	0	0	0

TABLE 5.12: Table 3C: Costs (per avocado), 2010

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.8	\$0.7	\$0.6	\$0.9

5.1. MONOPOLY'S MIGHT

TABLE 5.13: Table 3D: Profit (in thousands), 2010

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$ – 1.2	\$10.8	\$22.8	\$ – 13.2

Note: Production numbers are for AHS only. Buchanan High School, Fillmore High School, and Pierce Academy have the same production.

Memorandum

Date: January 15, 2011

To: School-Based Enterprise Students Avocado High School

From: Ronnie Johnson, Faculty Advisor

Subject: Congratulations on your new job—but is it ethical?

What a senior year you have had! As you know, your work helped the Biochemistry Club get the funding to develop a pesticide and genetic-engineering process that work together to eliminate the perseas mites. AHS immediately applied for and obtained patents, and this quick action allowed us to become the sole producer of the key ingredient of the pesticide and the DNA for the pest-resistant, genetically engineered avocado tree.

Because the pesticide works only on the genetically altered trees, the avocado trees at Buchanan, Fillmore, and Pierce High Schools were destroyed by the perseas mite. These schools stopped production of low-calorie avocados, leaving us with a monopoly of the market and soaring profits (and less production!), as the attached table for 2011 shows. Mega Avocado Corporation (MAC) saw these high profits, and purchased our patents for a handsome price. MAC also offered to make you Junior Executives in their firm after you graduate from AHS, and enroll you in a while-you-work Bachelor's Degree program they have set up.

If you accept the job as a Junior Executive, you must become a loyal member of MAC's corporate family, an obligation that brings you a nice salary and the burden of defending their monopoly. Of course, some of you may not want to become loyal executives in a monopoly firm. You may feel uneasy about eliminating Buchanan, Fillmore, and Pierce High Schools from the market and joining a monopoly for your own personal gain. The decision to accept MAC's offer is one you should take time to consider seriously.

Our school principal, Mr. Hass, is serious about this too and would like you to hold a debate at a school assembly, so everyone can think about the ethics of your decision. This is the resolution to be debated:

Monopoly profits are a just reward for innovation and efficiency gains. They are not an unfair payment to corporations who overcharge consumers and prevent firms from competing in the market.

To prepare for the debate, I'd like each of you to write a position paper on your decision. If you are going to accept MAC's offer, you must use economic arguments and the 2010 and 2011 price, sales, and profit data to persuade me that it is ethical to join a monopoly because you agree with the resolution above. If you decline the offer, you should use economic arguments to persuade me that joining a monopoly would be unethical, because you disagree with the resolution above.

PRODUCTION OF LOW - CALORIE AVOCADOS AT AVOCADO HIGH SCHOOL 2011

TABLE 5.14: Table 4A: Sales (in thousands), 2011

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	300	300	300	300
\$0.79	0	0	0	0
\$0.89	0	0	0	0
\$0.99	0	0	0	0

TABLE 5.15: Table 4B: Total Revenue (in thousands), 2011

Price	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.49	0	0	0	0
\$0.59	0	0	0	0
\$0.69	\$207	\$207	\$207	\$207
\$0.79	0	0	0	0
\$0.89	0	0	0	0
\$0.99	0	0	0	0

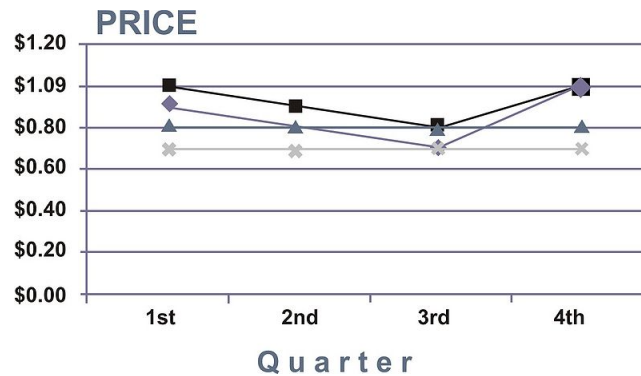
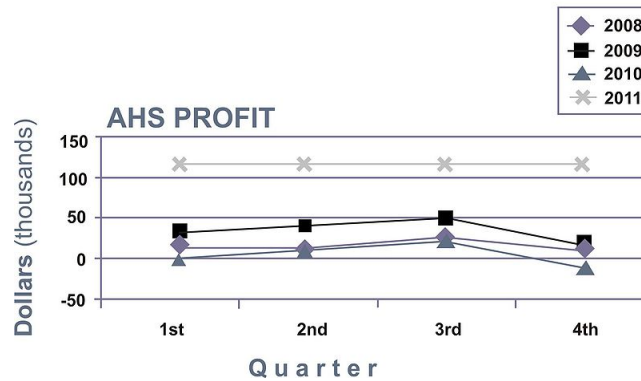
TABLE 5.16: Table 4C: Costs (per avocado), 2011

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$0.3	\$0.3	\$0.3	\$0.3

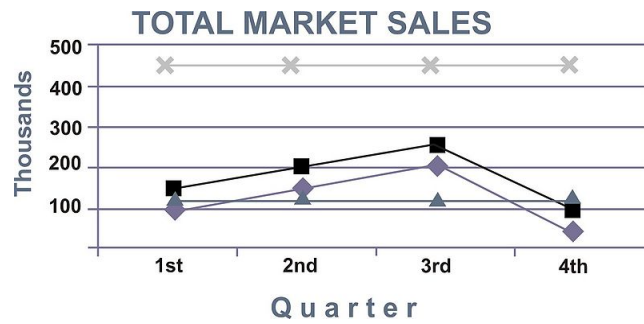
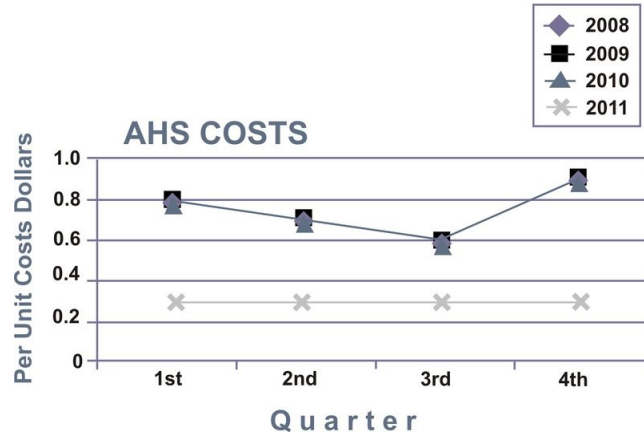
TABLE 5.17: Table 4D: Profit (in thousands), 2011

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
\$117	\$117	\$117	\$117

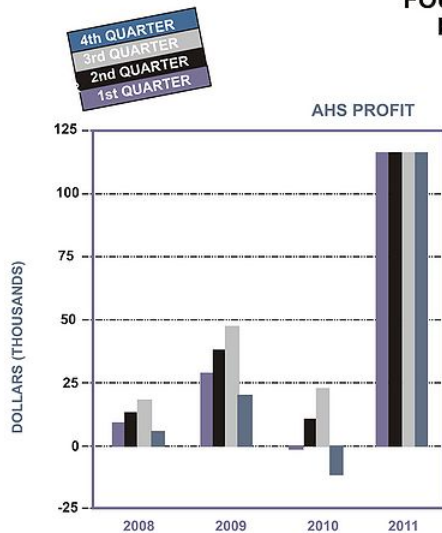
**FOUR-YEAR DATA
LINE CHARTS**



FOUR-YEAR DATA LINE CHARTS



FOUR-YEAR DATA BAR CHARTS





Teacher Materials

Economics Review

Markets

One of the main strengths of economic theory is its ability to provide a general explanation for the way in which price and output are determined in our economy, even though each industry has specific idiosyncrasies that underlie pricing and production.

In general, economists describe four distinct market types:

- Pure competition
- Monopolistic competition
- Oligopoly
- Pure monopoly

The table below briefly describes the characteristics of each of these four markets, which reflect a continuum rather than discrete markets. In general, two key characteristics underlie the movement from the competitive end of the market spectrum to the monopoly end: ease of entry into the market, and ease of substituting the firm's product with another's. In pure competition, no obstacles prevent firms from entering the market, and each firm's product is identical to other firms' products. In pure monopoly, absolute barriers exist to entry, and the firm's product is unique and has no close substitutes. As a firm moves from a purely competitive market to a monopolistic market (as our avocado company does) its control over price and profit potential increases.

TABLE 5.18:

Characteristic	Pure Competition	Monopolistic Competition	Oligopoly	Pure Monopoly
Number of	A very number	Many	Few	One
Type of product	Homogeneous with other firms	Differentiated	Homogeneous or differentiated	Unique—no close substitutes
Control over price	None	Very limited	Mutual dependence between firms	Considerable
Conditions of entry	No obstacles	Relatively easy	Significant obstacles	Absolute barriers
Nonprice competition	None	Considerable (advertising)	Usually considerable, if product differentiation	Mostly public relations

5.1. MONOPOLY'S MIGHT

TABLE 5.18: (continued)

Characteristic	Pure Competition	Monopolistic Com- petition	Oligopoly	Pure Monopoly
Typical examples	Agriculture	Apparel	Automobiles	Local utilities

General Characteristics of Firms in Each Type of Market

Pure Competition

Firms operating in a perfectly competitive market face *a large number of firms, all of which have identical products*. However, because so many firms operate in this market, each operates independently of the others. All firms in the industry produce a standardized (homogeneous) product, and the consumer is indifferent to which products s/he buys, making all products in the market perfect substitutes (e.g., fresh corn). In addition, nonprice competition does not exist among the firms (e.g., no advertising to differentiate products), and all firms are price takers. Because each individual firm is a small and insignificant part of the market, it has no influence on price and can sell all it wants at the going market price. If it tries to raise the price of its good, no one will buy it. Instead, consumers will purchase the identical product at a lower price from another firm. No incentive exists for a firm to lower the price because it can sell all it wants at the going market price. Lowering price would simply decrease total revenue, since the same amount can be sold at the higher price. Firms face no constraints to either entering or leaving a perfectly competitive market. No legal, technological, or financial obstacles exist in creating new firms or eliminating firms currently in the market.

Monopolistic Competition

Firms operating in a monopolistically competitive market face competition from *a large number of firms, all of which offer similar but not identical products*. While the “large number of firms” might not be as large as in the competitive market, each firm must have only a small percent of the market (defined as similar products). With a relatively small market share, firms have little control over market price and cannot collude with other firms on pricing or quantity produced. As a result, firms are not mutually interdependent, and each firm determines its policies without considering or knowing the possible reactions of rival firms.

Oligopoly

Firms operating in an oligopolistic industry face *market domination by only a few firms*. “Few” means that the firms are mutually interdependent because each firm considers the potential reactions of its rivals to its price, advertising, and production activities. Firms in an oligopolistic market may produce either a homogeneous (e.g., steel) or differentiated (e.g., automobile) product. The critical element is the mutual interdependence among firms in the industry, not the nature of the product.

Pure Monopoly

A firm operating in a pure monopoly market is *the only firm in that industry and produces a specific product with no close substitutes*. Thus, the firm and the industry are synonymous. Because the monopolist’s product is unique, the buyer sees no alternative to purchasing the good and must buy the good from the monopolist or go without it. This uniqueness allows the firm to exert a great deal of control over price (i.e., it is a price maker). As the only firm operating in the market, the monopolist is responsible for setting the total quantity of the good supplied and setting the selling price so all of the quantity produced is sold. It can change the product’s price by manipulating the quantity of the product supplied, but it is constrained in setting a price by the down-sloping demand curve for its product. Economies of scale and technological or legal barriers must completely block entry into the industry for monopoly power to exist. Although a monopolist faces no competition from other firms, it still could have an interest in advertising. For example, a monopolist selling a unique product might advertise to stimulate demand (e.g., diamonds), or it might advertise to create good will or enhance its image in the community.

Pricing and Output in Markets

No matter what the market’s structure, general principles of market operation apply that determine equilibrium price

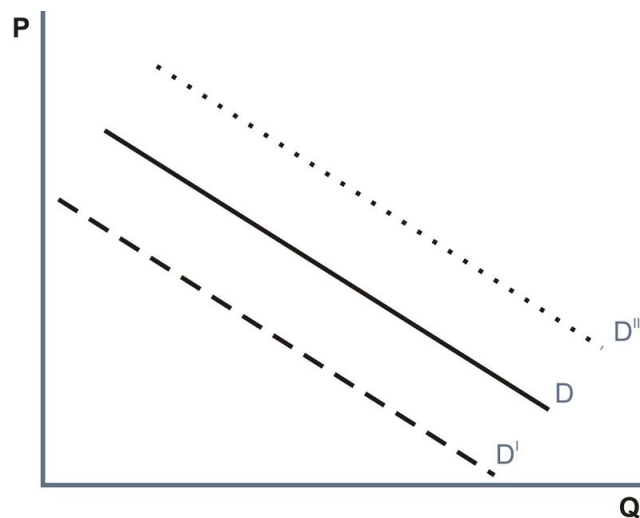
and quantity. In developing these general principles, we assume firms maximize profits, and that entry into and exit from a market is relatively easy.

A market is an institution or mechanism that brings together “buyers” (those who want the good) and “sellers” (those who make the good). Markets come in all forms. A farmer’s roadside stand, retail stores, and the New York Stock Exchange are all examples of firms operating in different types of markets. In fact, any situation that links potential buyers and sellers constitutes a market. Markets can be local, national, or international. Some markets are highly personal, while others are highly impersonal.

One of the most important activities in markets is the setting of the price of goods bought and sold. To understand the determination of prices, we must understand the mechanics underlying the decisions of consumers (demand) and producers (supply).

Demand

A demand schedule shows the various amounts of a product consumers are willing and able to purchase at each price (from a series of possible prices) during a specified period of time. We generally look at demand from the vantage point of price. That is, we are interested in how much individuals are *able and willing* to purchase at a given price. Remember that a demand schedule does not tell us which price will actually exist. For that, we must combine information from the demand schedule with information from the supply schedule.



The fundamental characteristic of demand is summarized in the law of demand: All else equal, as price falls, the quantity demanded rises (or all else equal, as the price rises, the quantity demanded falls). This law is illustrated in the demand curve (D) on the graph at right, in which Price (P) is plotted with Quantity (Q) .

What “all else” must be equal in order to graph the demand curve (D) ? Basically, there are five determinants of demand (i.e., the “equals”), or factors that can shift the demand curve. Notice that when demand is shifted out by one of these factors (D'') , more will be sold at each price. When demand is shifted in (D') , less will be sold at each price. Factors that determine demand are:

- Change in buyer tastes.** A favorable change in how buyers perceive the product will increase demand (i.e., shift the curve out). A negative change will reduce demand (i.e., shift the curve in).
- Change in number of buyers.** An increase in the number of buyers in the market (e.g., people move into an area) will increase demand for the good, while a decrease in the number of buyers will decrease demand.
- Change in income.** The impact of income on demand is not straightforward. If a positive relationship between income and demand exists, increases in income will lead to increased demand. Goods exhibiting these characteristics are called normal goods, and we buy more of them when our income goes up and less of them when our income goes down. Some goods are called inferior goods because an inverse relationship between

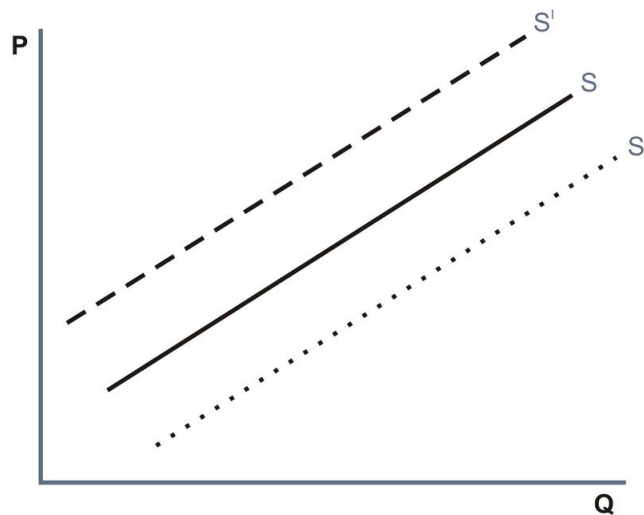
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income and demand exists. As income goes up, demand goes down, and as income goes down demand goes up. Examples include things that people often buy only when their income is low, such as used clothing.

- d. **Change in prices of related goods.** Whether a change in the price of another good increases or decreases a product's demand depends on whether the related good is a substitute or complement. A substitute good is one that can be used in place of another good, while a complement good is one that is used in conjunction with it. When goods are substitutes, as the price of one good rises (falls) demand for the other good falls (rises) because people switch from the good with the higher price to the one with the lower relative price. Air travel on different airlines and things like butter and margarine are often viewed as substitutes. Conversely, when goods are complements, as the price of one good rises (falls), demand for the other good falls (rises) because people cut back on consumption of both (complement) goods with price increases. Peanut butter and jelly, tennis balls and tennis racquets, and CD players and CDs are often viewed as complementary goods.
- e. **Change in expectations.** Consumer expectations about future prices, product availability, and future income can shift demand. Expectations of higher prices may prompt consumers to buy now to "beat" anticipated price increases, while an expected rise in income may induce consumers to spend more freely. Conversely, expectations of lower future prices or income may cause consumers to curtail spending in the current period.

Supply

A supply schedule shows the various amounts of a product that firms are willing and able to produce (in a series of possible prices) during a specified period of time. We generally look at supply from the vantage point of price. That is, we are interested in how much firms are *able and willing* to produce and make available for sale at a given price. The positive relationship between price and quantity produced arises because firms are willing to produce more of a good at higher prices than at lower prices. This contrasts to the behavior of consumers, for whom price serves as a deterrent to purchasing the good. All else equal, a firm will produce more of a good at a higher price because profit will be greater as price rises.



Remember, a supply schedule does not tell us which price will actually exist. For that we must combine information from the supply schedule with information from the demand schedule.

A fundamental characteristic of supply can be summarized in the law of supply: All else equal, as price increases, the quantity supplied increases (or all else equal, as the price falls, the quantity supplied falls). This law is shown in the supply curve (S) on the graph above, in which Price (P) is plotted with Quantity (Q) .

What "all else" must be equal in order to graph the supply curve (S) ? Basically, there are six determinants of supply (i.e., the "equals"), or factors that can shift the supply curve. Notice that when supply is shifted out by one of these factors (S'') , more will be produced at each price. When supply is shifted in (S') , less will be produced at each price. Factors that determine supply are:

- a. **Resource prices.** The relationship between production costs and supply is a close one because a firm's supply curve is based on production costs. A firm must receive higher prices for additional units of output, since costs generally increase with increased production. It follows that a fall in the price of resources will lower production costs and increase supply, and that a rise in the price of resources will increase production costs and decrease supply.
- b. **Technology.** A technological improvement generally means that fewer resources are used to produce a given quantity. As a result, production costs will decrease and supply will increase.
- c. **Taxes and subsidies.** Firms treat most taxes as costs and most subsidies as revenues. An increase (decrease) in taxes, therefore, will increase (decrease) production costs and lower (increase) supply. Conversely, an increase (decrease) in subsidies will lower (increase) production costs and increase (decrease) supply.
- d. **Prices of other goods.** Changes in the price of other goods can also shift the supply curve if the two products are related in production. For example, if the price of wheat increases, farmers may plant corn instead of wheat. In this case, the products are production substitutes.
- e. **Expectations.** The future price of a product can affect a firm's willingness to supply that product. If price is expected to rise in the future, firms may withhold some of the product to take advantage of expected higher prices.
- f. **Number of sellers.** The larger the number of suppliers, the greater the amount supplied in the market.

Equilibrium

By bringing together the concepts of supply and demand, we can see how the buying decisions of consumers and the selling decisions of producers determine the price of a product and the quantity actually bought and sold in the market. Let's examine the market for avocados in a given time period. The table below gives the schedule of quantity demanded and quantity supplied during the second quarter of 2006.¹

TABLE 5.19:

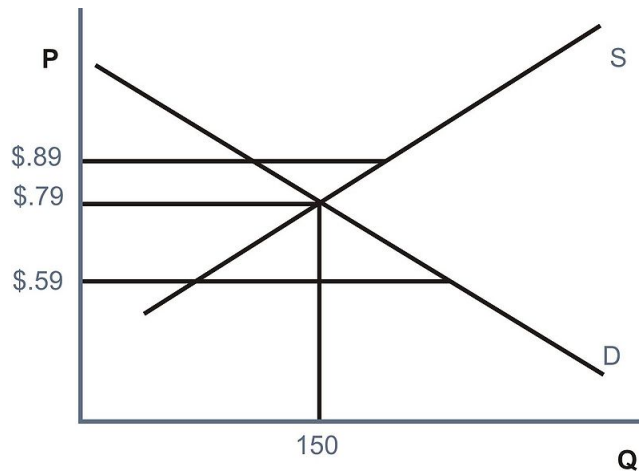
Price	Quantity Demanded (in millions)	Quantity Supplied (in millions)	Shortage (+) or Surplus (-)	Pressure on Price
\$.99	50	275	-225	↓
\$.89	100	225	-125	↓
\$.79	150	150	0	0
\$.69	200	50	+150	↑
\$.59	250	25	+225	↑
\$.49	300	25	+275	↑

Of the six possible prices at which avocados might sell in this particular market, we see equilibrium will be reached when 150 avocados sell for a price of \$.79 each. How did we arrive at this price? Say the price started at \$.89 in the first quarter. What happens? 225 avocados cannot be sold—and so a surplus of avocados exists. To sell the avocados, as opposed to letting them rot and having to dispose of them, the firm will lower the price, knowing that a decrease in price will lead to an increase in quantity demanded. At any price above the market clearing price of \$.79, an excess supply of avocados (i.e., a surplus) exists, and as a result, pressure will force firms to lower the price.

What if price falls below \$.79? At prices below \$.79 shortages exist—more people want avocados than are being produced. As a result, upward pressure on price occurs as people bid up the price of avocados. More simply, individuals are able and willing to pay a higher price for avocados (as the Quantity Demanded column indicates) and will bid up their price. As price rises, fewer people are able and willing to buy avocados and the shortage lessens.

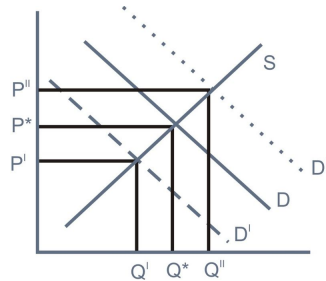
At the equilibrium price of \$.79, the number of avocados that consumers are able and willing to buy exactly equals the number of avocados that firms are able and willing to produce and sell. Neither shortages nor surpluses exist at this market clearing price. Price has served as the equilibrating mechanism to clear the market. This market is graphically illustrated at right.

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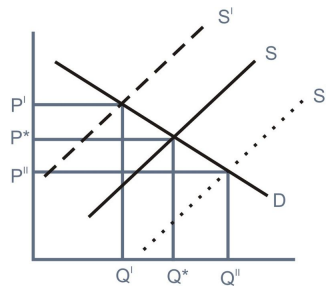


Of course, the above graph can be used to illustrate only changes in quantity demanded or quantity supplied—movements along the demand or supply curve in response to changes in the price of avocados. In the graph, everything but price and quantity is held constant. Equilibrium price will change with changes in either demand or supply; that is, when either the demand or supply curve shifts. When either the demand or the supply curve shifts, it is easy to predict how price and quantity will change.

1. **Demand increase.** Price and quantity will both increase (from P^*Q^* to $P''Q''$), as illustrated at right (in D'').



2. **Demand decrease.** Price and quantity will both decrease (from P^*Q^* to $P'Q'$), as illustrated at right (in D').



3. **Supply increase.** Price will decrease and quantity will increase (from P^*Q^* to $P''Q''$), as illustrated at right (in S'').

4. **Supply decrease.** Price will increase and quantity will decrease (from P^*Q^* to $P'Q'$), as illustrated at right (in S').

¹ The demand and supply schedules were constructed for similarity in the information given to the students. During the second quarter 2006, the cost of producing an avocado is \$.70, which means that all prices lower than \$.70 result in a loss. The schedule indicates that some production will occur even at a loss because we assume that loss is only for the up their price. As price rises, fewer people are able and willing to buy avocados and the shortage lessens.

short run and that some inputs to production are fixed. As a result, production will not fall below 25 avocados before the firm exits from the industry.

We also assume AHS is the sole producer of avocados. As a teacher, you can either tell your students that AHS is a monopoly that can satisfy the market (with competing firms being free to enter), or you can tell them AHS is typical of all firms in the market. In the latter case, 100 firms could operate, and the quantity demanded and supplied can be multiplied by 100 to get market demand and supply.

Competition

Remember the characteristics of pure competition:

- a. Very large number of firms in the industry
- b. Homogeneous product
- c. Firms are price takers
- d. Free entry and exit

Because each firm in a competitive market offers a negligible fraction of total industry supply, the individual firm cannot influence the market price, and the forces of supply and demand discussed in the preceding benchmark lesson establish equilibrium price. The firm in a competitive market can merely adjust its output to the market price. In other words, it will take the price set by the market (i.e., it is a “price taker”) as a piece of information to establish levels of production. This means that the demand curve facing the firm in a competitive market is perfectly elastic at market price (i.e., a firm can sell all it wants at the going market price.)

How much does the firm produce? It sets output levels at the point where profits are maximized—that is, where total revenue exceeds total cost by the largest amount. At this point, marginal revenue equals marginal cost. Should profits exist at this point, firms will enter the industry and market supply will increase. As we have seen in the preceding benchmark lesson, an increase in supply will lower price. The lowering of price will decrease the profits made by the firm. Firms will continue to enter and drive down price as long as economic profit exists. The entrance of firms into the market and reduction of price will eventually eliminate all economic profits.

What if the price dictated by the market does not cover costs? That is, total revenue never exceeds total cost and losses ensue. In this case, firms will exit from the market. As firms exit and market supply decreases, price will rise and increase the total revenue for the remaining firms. As firms continue to exit and price continues to rise, losses will be reduced. The exit of firms and increase of price will eventually eliminate all losses.

The entry and exit of firms from the market will eliminate all profits and losses in the long run. As a consequence, firms in a competitive market will have neither profits nor losses in the long run, although in the short run, either could exist. We note that when we say no profit exists, we mean no *economic* profit exists. Remember, *normal* profit (i.e., accounting profit) exists because a normal return on investment is part of a firm’s costs.

Bottom Line on Competition

Advantages

- In the long run, each competitive firm operates at optimum efficiency (i.e., lowest per unit cost). Resources could not possibly be arranged more efficiently.
- The consumer gets the product at *the lowest possible price* since competition eliminates all economic profit.
- Resources could not be rearranged any better to produce goods and services that would give consumers more satisfaction.

Disadvantages

- Competition may be efficient at a point in time but not over time. Since profits result in a normal rate of return, the competitive firm may not undertake research and development, which leads to a slower rate of technical progress.

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- Perfect competition is efficient only if there are no social costs, no social benefits, and no economies of scale in the relevant range of production.
- Competition may produce too much inequality.

Monopoly

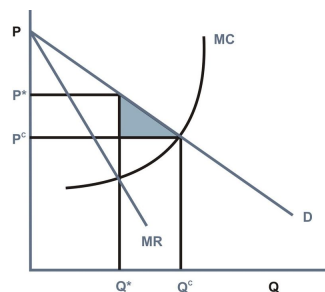
Remember the characteristics of a monopoly:

- A single seller in the market
- A unique product with no close substitutes
- Entry into the market by other firms is completely blocked

Because only one firm operates in a monopoly market, the demand curve facing the firm is the market demand curve illustrated in the Benchmark Lesson on Markets. The demand curve of the industry and demand curve of the firm are the same, and the monopoly must lower price to increase sales, unlike a firm in the competitive market that can sell all it wants at the going market price.

Lowering price to boost sales means that the marginal revenue the firm brings in from selling additional units of a good is less than the price of the good. Why? Price reductions apply not only to the extra output sold, but also to all other units that could have been sold at a higher price.² As a result, the additional revenue brought in from additional units sold (with the reduction in price) is “offset” by the loss in revenue on units that could have sold at a higher price.

For example, in the graph at right, if price is lowered from P^* to P^c to increase production from Q^* to Q^c , the firm must lower the price for all individuals who originally paid P^* . As a result, the marginal revenue (MR) from the additional units sold is less than the new price. A numeric example might help. Say P^* equals \$.70 and Q^* equals 5000. When price falls to \$.60 (P^c), quantity increases to 6000 (Q^c). Total revenue increases by 100 and marginal revenue $((TR^* - TR^c)/(Q^* - Q^c))$ is 10, which is less than the \$.60 price (note: $TR = P \times Q$).



How much output does a monopolist produce? Because monopolists want to maximize profits, they will set production at the point where total revenue exceeds total cost by the greatest amount—where marginal revenue (MR) equals marginal cost (MC). However, they will set the price in such a way that consumers will purchase only the profitmaximizing amount of the goods. Because price is above marginal revenue (which is equal to marginal cost), price will most likely exceed marginal costs, and profits will ensue. Phrased somewhat differently, monopolists will reduce output over that produced by all firms in a competitive market. Because quantity produced is reduced, prices can be raised and profits made. Unlike the competitive market, other firms cannot enter the market to lower price and eliminate profit because entrance is blocked. As a result, monopolists can make profits in both the short run and the long run.³ The inefficiencies created by a monopoly can be seen in the shaded triangle (the deadweight loss) on the graph above. Under perfect competition, price would be set at P^c with an output of Q^c (where supply equals demand). Under monopoly conditions, with price increased to P^* and output reduced to Q^* , consumers lose some of their surplus. Consumer surplus is the difference between what the consumer is able and willing to pay (as represented by the demand curve) and the actual price paid. Since most consumers are able and willing to pay more for a good than is actually paid, they get a “surplus.” When monopolies decrease production and increase price, consumers lose some surplus, which is termed deadweight loss.

Even though a monopolist will decrease output and increase price as compared to firms in a competitive market with identical cost curves, these inefficiencies could be offset or lessened by economies of scale, technological progress, or innovations. Economies of scale simply means that the cost of producing additional units of a good decreases as a firm increases production. That is, the initial per-unit cost of operating the firm is high, but lessens as the firm grows in size. This might result in high initial fixed costs (i.e., high start-up costs), or in technology that can be used only with large-scale production, both illustrated by continuously declining marginal costs.

Monopoly profits are also used as an incentive to innovate. Copyrights and patents are legal ways of protecting profits by eliminating a firm's entrance into a specific market for a fixed period of time. As a result, firms have the incentive (economic profits) to undertake research that might produce an innovation that leads to a monopoly. Medical drugs are an example of expensive research that is done because monopoly profits can be achieved once new, effective drugs are discovered. If drug companies thought that their profits would be eaten away by firms entering the market (driving down price and profits) once the new drug hit the market, they would not undertake the costly research for innovation.

Bottom Line on Monopoly

Advantages

- Economies of scale can exist so that each unit is produced more efficiently (i.e., at a lower per-unit cost) in larger firms.
- Monopoly profits provide the incentive (and funds) for the firm to engage in research and development.

Disadvantages

- Monopolies increase prices and decrease quantity over competitive markets.
- Deadweight losses indicate that monopolies are inefficient.

² This assumes that the firm does not engage in price discrimination.

³ Because price is constrained by demand for a product, being a monopoly does not ensure profits. Losses result if demand is not sufficient to cover costs. For instance, holding a patent for making chocolate-covered roaches does not ensure a demand sufficient to cover the cost of production. With little demand, losses would follow and the Chocolate-Covered Roach Company would be forced to close shop and go out of business.

Concept Definitions

The curriculum was designed to teach the following concepts:

Barrier to Entry Anything that prevents firms from coming into an *industry*.

Change in Demand See *Demand*.

Change in Supply See *Supply*.

Competition (Competitive Market) A market in which 1) a very large number of firms sell a standardized product, 2) entry into the market is very easy, 3) the individual seller has no control over the price at which the product sells, 4) nonprice competition does not occur, and 5) a large number of buyers and sellers exists.

Corporation A type of firm that is a legal entity separate from the people who own, manage, and otherwise direct its affairs.

Demand Purchases of a good or service that people are actually able and willing to make given price and choices available to them. The **law of demand** states that a negative (or inverse) relationship exists between price

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and quantity demanded. That is, as price increases (decreases) the amount of a good purchased decreases (increases). Consumers' demand is determined by their tastes, their income, and by the price of other goods. The **demand schedule** is a table showing the quantities of a good that will be purchased at various prices. The **demand curve** is a curve that relates the price of a product and the quantity of the product that individuals are able and willing to purchase. **Aggregate demand** is the total demand for goods and services in the economy by households (for consumer goods), by *firms* and government (for investment goods), and by other countries (exports).

Entrepreneur The human resource that combines other resources to produce a good, makes nonroutine decisions, innovates, and bears risks.

Equilibrium Price The price in a *competitive market* where the quantity demanded and the quantity supplied are equal. The price where neither shortages nor surpluses exist and no incentive exists for prices to rise or fall.

Equilibrium Quantity The quantity demanded and quantity supplied at the *equilibrium price* in a *competitive market*.

Market Any institution or mechanism that brings together the buyers (demanders) and sellers (suppliers) of a particular good or service.

Market Economy An economic system (Method of organization) in which only the private decisions of consumers, recourse suppliers, and producers determine how resources are allocated.

Monopoly A market in which one firm 1) sells a unique product, 2) no close substitutes for the product exist, 3) entry is blocked, 4) the firm has considerable control over the price at which the product sells, and 5) nonprice competition may or may not be found.

Opportunity Cost The real sacrifice involved in achieving something. The value of the next best opportunity that would be foregone in order to achieve a particular thing.

Patent A document granting an exclusive right to produce, use, sell, and profit from an invention, process, etc. In the U.S., patents are granted for 20 years from date of application or 14 years from date of issuance.

Price See *Equilibrium Price*.

Profit Total revenue minus total direct costs. This is distinguished from **economic profit**, which is the residual of total revenue minus total costs when a normal rate of return on investment is included as a part of a cost. In a *competitive market* economic profit is zero.

Quantity See *Equilibrium Quantity*.

Scarcity A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

Supply The amount of a good or service that *firms* are prepared to sell at a given price. The firm determines how much to supply using its marginal cost curve (the curve showing how much it costs to produce the next unit). **Industry supply** is the summation of individual firms' marginal cost curves (in a constant cost industry). The **supply schedule** is a table showing the amount of a product that will be produced at a given price. The **law of supply** dictates that the curve is upsloping, indicating that more will be produced as the price of a good increases. **Aggregate supply** is the total amount of goods and services available for consumption and consists of both domestically produced goods and services and imports.

Tradeoff An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

Teachers can also demonstrate the following concepts using this lesson:

Corporation A type of firm that is a legal entity chartered by a state or the federal government that is distinct and separate from the individuals who own, manage, and otherwise direct its affairs.

Economies of Scale The reduction in the average total cost of producing a good as the *firm* expands the size of its plant (or its output).

Industry A group of *firms* that produce identical or similar products.

LINCOLN-DOUGLAS STYLE DEBATE PROCEDURE

This style of debate has two sides. The side that favors the proposition is called the **Affirmative Position** and the side that opposes the proposition is called the **Negative Position**. The style is very reliant on time and good decorum. As a teacher, you must moderate with authority and keep time to ensure that both are maintained. As the moderator, you will announce the debate and call the debate to order. As the timekeeper, you will keep speakers within time constraints.

Members of each debate team have specified roles, with each member of the team having at least one job.

TABLE 5.20:

Affirmative Position

Lead Debater — Presents the overall argument of the Affirmative Position.

Question Asker — Asks the Negative Position team questions about its argument.

Question Answerer — Must be able to answer questions about the team's position.

Rebutter — Responds to the arguments raised by the questions.

Closer — Sums up Affirmative Position, referring to new issues raised in the debate.

Negative Position

Lead Debater — Presents the overall argument of the Negative Position.

Question Asker — Asks the Affirmative Position team questions about its argument.

Question Answerer — Must be able to answer questions about the team's position.

Rebutter — Responds to the arguments raised by the questions.

Closer — Sums up Negative Position, referring to new issues raised in the debate.

The debate proceeds through a set of regimented steps. Make sure you hold the class to the steps and constraints so they understand the process of formal debating.

1. The moderator announces the proposition to be debated:

“Monopoly profits are a just reward for innovation and efficiency gains. They are not an unfair payment to corporations who overcharge consumers and prevent firms from competing in the market.”

2. The Moderator must introduce each speaker after the Timekeeper calls time.

3. The Timekeeper must keep track of time, letting participants know when they have one minute left to speak and when their time is up.

4. 5 minutes : Lead Debater for the Affirmative Position presents position.

5. 3 Minutes : Question Asker from the Negative Position team asks questions of Question Answerer from the Affirmative Position team.

6. 5 Minutes : Lead Debater for the Negative Position presents argument.

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7. 3 Minutes : Question Asker from the Affirmative Position team asks questions of Question Answerer from the Negative Position team.
8. 3 Minutes : Affirmative Rebutter responds to the arguments raised by the questions.
9. 3 Minutes : Negative Rebutter responds to the arguments raised by the questions.
10. 5 Minutes : Affirmative Closer sums up position, referring to new issues raised in the debate.
11. 5 Minutes : Negative Closer sums up position, referring to new issues raised in the debate.

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5, “Meets Standards” equals a 3, and “Does Not Meet Standards” equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

TABLE 5.21: Monopoly’s Might: Rubric for Position Paper on Joining a Monopoly

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Definition of the Problem (10%) Key Aspects: <ul style="list-style-type: none"> • The need to decide whether or not to join the monopoly as a Junior Executive • The need to consider all aspects of the decision and use persuasive economic arguments 	Describes the problem clearly, accurately and completely in terms of all key aspects Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics	Describes the problem clearly and accurately in terms of most key aspects Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts “made up” to avoid grappling with key aspects of economics	Does not describe the problem clearly and accurately, or omits most or all key aspects Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts “made up” to avoid grappling with key aspects of economics

TABLE 5.21: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding of Economics (80%)	All key points are clearly, accurately and completely discussed using sound economic thinking and vocabulary Specific, accurate data from tables in the unit are used to support the decision to accept or decline the position with the monopoly	All key points are clearly and accurately discussed while attempting to use accurate economic thinking and vocabulary Accurate data from tables in the unit are used, at least in a general way, to support the decision to accept or decline the position with the monopoly	The information in the presentation is unclear and/or economic thinking may be incorrect; any or all key points may be missing or inaccurately discussed Data from tables in the unit are not used, and/or are used inaccurately, to support the decision to accept or decline the position with the monopoly
Key Points:			
<ul style="list-style-type: none"> • Characteristics of a monopoly • How prices and profits are determined in monopolistic and competitive market economies • Advantages and disadvantages of monopolies 			
Quality of Writing (10%)	Writing is well organized and highly persuasive; it defends the decision with precise and relevant evidence Writing is free of significant errors in mechanics and grammar; ideas are well organized and clearly understandable	Writing is organized and persuasive; it defends the decision with relevant evidence Writing has few significant errors in mechanics and grammar; ideas are for the most part organized and understandable	Writing is not organized and/or persuasive; it does not defend the decision with relevant evidence Writing has several significant errors in mechanics and grammar; ideas are not clearly organized and/or understandable

TABLE 5.22: Monopoly's Might: Rubric for Debate on Monopolies

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding Economic Terms and Concepts (60%)	Clear and accurate economic thinking and vocabulary are used; all key points are discussed	Clear and accurate economic thinking and vocabulary are used; most key points are discussed	Economic thinking and vocabulary, if used, are unclear and/or inaccurate; most or all key points are not discussed
Key Points:			
<ul style="list-style-type: none"> • Characteristics of a monopoly • How prices and profits are determined in competitive markets and under monopolies • Advantages and disadvantages of monopolies 			

TABLE 5.22: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Discussion of Ethics (20%) Key Points: <ul style="list-style-type: none"> • Fairness of high profits and elimination of competitors • Just rewards for innovation and efficiency gains 	Ethical aspects of the decision are discussed thoughtfully and in detail	Ethical aspects of the decision are discussed in some detail	Ethical aspects of the decision are not discussed, or are discussed in a casual, general or vague way
Participation in and Quality of Debate (20%)	Opening statement and closing summary are organized and clear, thoroughly address key points, and are highly persuasive in their use of evidence and logic Questions focus on important points and are targeted at the weakest parts of opponent's arguments Rebuttal responds to specific and most important points in opponent's arguments	Opening statement and closing summary are organized, clear, and address most key points Questions focus on important points in opponent's arguments Rebuttal responds to specific points in opponent's arguments	Opening statement and closing summary are not organized and/or clear, and/or may omit key points Questions are not asked, are few, and/or do not focus on important points in opponent's arguments Rebuttals do not respond to specific points in opponent's arguments

Test for *Monopoly's Might*

Name _____

PLEASE BUBBLE IN YOUR ANSWERS COMPLETELY—LIKE THIS "Bold"

1. Which of the following is most essential for a market economy?
 - a. effective labor unions
 - b. good government regulation
 - c. responsible action by business leaders
 - d. active competition in the marketplace
2. In a market economy, the public interest is likely to be served even when individuals pursue their own private economic goals, because of:
 - a. the operation of competitive markets
 - b. the social responsibility of business leaders
 - c. careful planning and coordination of market activity
 - d. individuals' understanding of what is in the public interest
3. A newspaper reports, "COFFEE GROWERS' MONOPOLY BROKEN INTO SEVERAL COMPETING FIRMS."
If this is true, we would expect the coffee-growing industry to:
 - a. increase output and decrease prices

- b. decrease output and increase prices
 - c. use more capital goods and hire fewer workers
 - d. use fewer capital goods and hire fewer workers
4. If you saw a headline that read, “ACME WIDGET CORPORATION RAISES PRICES: REST OF WIDGET INDUSTRY EXPECTED TO FOLLOW,” it is likely that Acme Widget Corporation is an industry that has:
- a. few sellers
 - b. many sellers
 - c. many buyers
 - d. few buyers

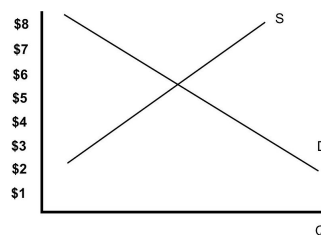
The following questions are from Matthew Marlin, Turley Mings and Diane Swanson, *Teaching and Testing from The Study of Economics: Principles, Concepts and Applications* (5th edition) 1995. Guilford, Connecticut: Dushkin Publishing Group/ Brown and Benchmark Publishers.

5. In a market economy, the opportunity to make a profit for providing a good or service is called:
- a. an inducement
 - b. a reinforcement
 - c. an incentive
 - d. a motive
6. Which of the following causes competitive markets to *move away* from an equilibrium price?
- a. supply changing to meet demand
 - b. consumers switching to complements and substitutes in reaction to price changes
 - c. government price controls
 - d. buyers and sellers reacting to shortages and surpluses
7. Which of the following is closest to being a purely competitive market?
- a. agriculture
 - b. automobile manufacturing
 - c. fast-food restaurants
 - d. public utilities
8. Which of the following is *not* a characteristic of a purely competitive market?
- a. Firms have no control over the prices they charge.
 - b. There are a wide variety of different products.
 - c. There are a large number of firms in the market.
 - d. It is easy for new firms to enter the market.
9. Which of the following is *not* a characteristic of a purely competitive market?
- a. There are a significant number of firms entering and exiting the market.
 - b. There are a significant number of different prices being charged by different firms in the market.
 - c. There are a large number of firms in the market.
 - d. Firms in the market produce a fairly standardized product.
10. Which of the following is the main production choice a purely competitive firm must make?
- a. what price to charge
 - b. how to differentiate its product from the product of its rivals
 - c. how much to produce at a given price
 - d. how much to produce at different prices
11. When can a purely competitive firm earn economic profits?
- a. in the long and short runs

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- b. only in the long run
 - c. only in the short run
 - d. never
12. What attracts new firms to competitive markets that have experienced an increase in demand for their products?
- a. normal rates of return
 - b. lower costs
 - c. economic profits
 - d. marginal revenues
13. Why can't firms in purely competitive markets earn economic profits in the long run?
- a. Long-run costs increase due to diminishing returns.
 - b. The long-run normal rate of return is less than the short-run of return.
 - c. Demand returns to equilibrium in the long run.
 - d. Economic profits attract new firms to the market.
14. Which of the following does *not* occur in the long-run equilibrium in a purely competitive market?
- a. The firm minimizes production costs per unit.
 - b. The firm earns a normal rate of return.
 - c. New firms will have an incentive to enter the market.
 - d. Economic profits equal zero.
15. Which of the following is the correct order of changes resulting from an increase in demand in a purely competitive market?
- a. price increases, profit increases, supply increases
 - b. supply increases, price increases, profit increases
 - c. profit increases, price increases, supply increases
 - d. supply increases, profit increases, price increases
16. Which of the follow describes the long-run effect of short-run profits in a purely competitive market?
- a. Producers will be able to sell their goods for considerably more than it cost to produce them.
 - b. The level of output will increase and economic profit will fall back to zero.
 - c. The level of output will decrease and prices will increase.
 - d. Output will remain constant and prices will rise.
17. In which of the following market structures does the firm have the *least* influence on the prices it charges?
- a. pure competition
 - b. monopolistic competition
 - c. oligopoly
 - d. pure monopoly
18. In which of the following market structures does a company have greatest control of its prices?
- a. pure competition
 - b. pure monopoly
 - c. oligopoly
 - d. monopolistic competition
19. An economic system that is primarily dependent upon the actions of independent buyers and sellers is called a:
- a. market economy
 - b. free enterprise economy
 - c. capitalist economy
 - d. all of the above
20. The lure of profits determines what gets produced in which kind of economic system?

- a. a market economy
 - b. a traditional economy
 - c. a command economy
 - d. all of the above
21. One socioeconomic goal that must be achieved in order for a market economy to work well is:
- a. an equitable distribution of income
 - b. job security
 - c. economic freedom for people to choose what they want to buy
 - d. full employment
22. An increase in the demand for soda will result in which of the following?
- a. more soda sold at lower prices
 - b. less soda sold at lower prices
 - c. more soda sold at higher prices
 - d. less soda sold at higher prices
23. Which of the following will cause the supply of microcomputers to increase?
- a. an increase in the price of inputs such as computer chips
 - b. an increase in the demand for computers
 - c. a decrease in the demand for mainframe computers
 - d. an increase in the number of firms producing microcomputers.
24. In the figure below, if the price is \$3 , which of the following is *true*?
- a. A shortage exists, and eventually the price will fall.
 - b. A shortage exists, and eventually the price will rise.
 - c. A surplus exists, and eventually the price will fall.
 - d. A surplus exists, and eventually the price will rise.



25. Which of the following occurs when economic profits are negative in a purely competitive market?
- a. long-run equilibrium exists
 - b. firms exit the market
 - c. firms enter the market
 - d. firms raise prices to increase profit levels
26. Which of the following is *not* a consequence of increased market concentration?
- a. higher prices
 - b. lower barriers to entry
 - c. monopoly profits
 - d. less total output in the market
27. Which of the following best describes beliefs about government intervention in a free market economy?
- a. Market economies cannot function without government.
 - b. Although markets can work by themselves, they work better in conjunction with proper government planning.
 - c. Market economics cannot function properly today due to monopoly power.

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- d. Government planning is incompatible with competitive markets and leads to reduced economic well-being.
28. Improvements in the production of stereo manufacturing will result in which of the following?
- a. a decrease in the demand for stereos
 - b. an increase in the demand for stereos
 - c. a decrease in the supply of stereos
 - d. an increase in the supply of stereos
29. Which of the following is the most important determinant of resource allocation in market economies?
- a. producer spending decisions
 - b. government spending decisions
 - c. the average propensity to save
 - d. consumer spending decisions

Test for *Monopoly's Might*

Teacher's Answer Key

The following questions are taken from John C. Soper and William B. Walstad, *Test of Economic Literacy* (2nd edition) 1987. NY: Joint Council on Economic Education.

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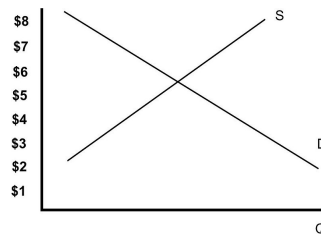
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5.1. MONOPOLY'S MIGHT

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 - the average propensity to save
 - consumer spending decisions**

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

John R. Mergendoller, Ph.D. Executive Director

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Graphic design: Pam Scrutton, San Francisco, CA

CHAPTER 6**The Greater Good****CHAPTER OUTLINE**

6.1 THE GREATER GOOD



6.1 The Greater Good

(formerly The Great Awakening)

Unit Overview

- **Time Required**

6-8 hours of class time

- **Project Scenario**

When economic production is limited to a single country, it is less than it would be if production is specialized and goods are traded with other countries. With trade and voluntary exchange, countries can specialize and produce only their lower-cost goods, which will net them a comparative advantage in production, then trade with other countries for goods that have a higher relative cost. The trade process increases the goods and services that can be produced with a given amount of resources. However, trade can raise concerns in a country about the effect on workers, the environment, and natural resources. To explore these concepts and issues, students are presented with the following problem-solving scenario:

Two island nations, Hatfield and McCoy, have an unfriendly relationship with each other but friendly relationships with their neighboring island nations. Their two island neighbors have just ended a long war, opening the possibility for trade. Hatfield and McCoy each pursue the possibility of trade with the two neighboring islands by analyzing each island's data on the hours it takes to produce goods, and discover economic benefits that occur with specialization of production and trade. When war once again breaks out between the two neighboring islands, Hatfield and McCoy decide to negotiate a trade agreement with each other. Protests about the agreement arise on both islands, led by labor and environmental groups, and the leaders of the islands must create public awareness materials that justify their reasons for trade.

- **Concepts to be Learned**

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- **Absolute Advantage**
- **Comparative Advantage**
- **Costs**
- **Export and Import**
- **Free Trade**
- **Market Economy**
- **Opportunity Cost**
- **Protectionism**
- **Quota**
- **Resources (Factors of production)**
- **Scarcity**
- **Specialization**

- **Tariff**
- **Tradeoffs**
- **Voluntary Exchange**
- **Voluntary Restraint Agreement**

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- **Division of Labor**
- **Exchange Rate**
- **Trade Deficit**
- **Placement In Curriculum**

The Greater Good is designed to be the fourth *Project Based Economics* unit students complete. This unit teaches students about the concepts of the economic benefits from specialization with comparative advantage and free trade. Prior to undertaking this project, students should be familiar with the microeconomic concepts learned in **Running in Place**, **The Invisible Hand**, and **Monopoly's Might**.

- **Sequence and Key Content of PBE Units**

Essential Units:

- Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- The Invisible Hand** – free markets and supply incentives
- Monopoly's Might** – competitive markets and supply/demand forces within them
- The Greater Good** – comparative advantage and free trade
- The President's Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)
- **NCEE Content Standards Addressed**

The Greater Good addresses the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standards.

TABLE 6.1:

Standard #	Economic Concept
1	Scarcity
2	Opportunity Cost
5	Free Trade and Voluntary Exchange
6	Specialization and Free Trade

The Greater Good can also be used to teach the following standards:

TABLE 6.2:

Standard #	Economic Concept
3	Market Systems
7	Market Economies
11	Money
13	Income and Productivity

Project Based Learning and Project Based Teaching

- **Definition of PBL**

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

- **Components of Project Based Economics Units**

6.1. THE GREATER GOOD

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”
- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The **Driving Question** is written in a way that focuses students on the exact problem they need to resolve. The Driving Question is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class’ unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are *not* economic terms — may also be defined on the spot, if necessary for understanding.

NOTE: The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as

charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CD-ROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity.

In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- **Notes to the Teacher:** At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.

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- Arrange for peers to check each others' understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer's if they have swapped and read each other's logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
- Talking with certain students or groups to address their misconceptions and misunderstandings
- Giving additional textbook reading assignments, and/or directing students to online resources and explanations
- Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions

to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

- **Maximizing the Effectiveness of Project Based Teaching**
- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not

just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE* unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.
- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching The Greater Good

- **Sequence of the Unit**

Like the other BIE *Project Based Economics* units, students complete **The Greater Good** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible at least during the first several times **The Greater Good** is taught. Each instructional activity is discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

Launching the Project

1. Students view **first video from Carlos Medine**, read the transcript, and discuss it as a whole class.

Framing the Inquiry

2. Students develop **initial “know” list** with the teacher (whole-class discussion).
3. Students develop **initial Driving Question** with the teacher (whole-class discussion).
4. Students develop **initial “need to know” list** with the teacher (whole-class discussion).

Problem-Solving and Learning Activities

5. Students receive **memo with three questions** to research and are divided into three expert groups.
6. Students read **report on free trade and protectionism** and write answers to the question assigned to their expert group (as individuals or pairs).
7. Students **share and discuss answers** to three questions about free trade and protectionism (whole-class discussion).
8. Students **revise the know/need to know list** (whole-class discussion).
9. Teacher **divides students into two groups**, the island nations of Hatfield and McCoy.
10. Students receive Table 1 for their island, are told to keep it secret from students in the other island, and review it with the teacher (whole-class discussion).
11. Teacher provides **clarifying lesson # 1** on *resource productivity and use*.
12. Students receive **Table 2 for their island** and calculate opportunity costs (in small groups).
13. Teacher provides **clarifying lesson # 2** on *comparative advantage*.
14. Students individually write **first Project Log entry** on opportunity cost and comparative advantage.
15. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
16. Teacher provides **clarifying lesson # 3** on *specialization and trade*.
17. Students receive **Table 3 for their island** and determine reduction in hours with specialization and trade (in small groups).
18. Students view **second video from Carlos Medine**, read the transcript, and discuss it as a whole class.
19. OPTIONAL: Students **revise the Driving Question** with the teacher (whole-class discussion).
20. OPTIONAL: Students **revise the know/need to know list** with the teacher (whole-class discussion).
21. Students **decide which goods would be most efficient to produce** by their island (in small groups).
22. Students **negotiate trade agreements** using the *Trade Agreement* worksheet (in foursomes, two representatives from each island).
23. Students view **video from Ellis McClure** on disadvantages of trade and discuss it as a whole class.
24. Students review **flier against trade** and discuss it as a whole class.
25. Teacher provides **clarifying lesson # 4** on *benefits and costs of tariffs, quotas, and voluntary restraint agreements*.
26. Students individually write **second Project Log entry** on tariffs, quotas, and voluntary restraint agreements.
27. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
28. Students view **third video from Carlos Medine**, read the transcript, and discuss it as a whole class.
29. Students **finalize the Driving Question** with the teacher (whole-class discussion).
30. Students **finalize the know/need to know list** with the teacher (whole-class discussion).
31. Teacher **shares supplied rubric with students** to guide their work.

Presentation, Assessment, and Debrief

32. Students **create flier** defending the trade agreement (individually, in pairs, *or* in small groups).

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33. Students **present and compare fliers** (whole-class discussion).
34. Teacher **uses supplied rubric to assess fliers**.
35. Teacher conducts **debrief to clarify and consolidate** students' understanding of key economic concepts (as necessary).
36. Teacher manages **student reflection** on the 21st century skills practiced and the process of learning in PBL.
37. Teacher uses supplied **multiple-choice test** to assess individual students' knowledge of key economic concepts.
38. Teacher makes **notes on adjustments to the unit** to improve student learning for the next time the unit is taught.

- **Step-by-Step Teaching Guide**

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

0. **Teacher prepares for successful project implementation.**

There are a number of issues that must be considered before embarking on a project with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance (textbooks, articles, websites, etc.)?
- Do all students have the skills they need to tackle the project — including basic literacy skills as well as the ability to work in teams, make presentations, and conduct research? If not, is it necessary to pre-teach some of these skills, make sure students who need it have adequate support, or deal with these challenges in other ways?
- How will student groups be formed?
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the library/media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/minilecture materials are ready, or at least underway.

Special notes on handouts and video recordings for this unit:

- Students are formed into two groups, each representing a different island nation. Each group will receive its own set of handouts, so using a different color for each group will help keep this straight.
- Mid-way through the unit students are shown a flier used by opponents of trade. Instead of making several paper copies of this, you could make one or two color copies to pass around the room while you project an image of it using a scanned version on the DVD or download available at the BIE website, www.bie.org.
- A video recording serves as the “Grabber” that sets up the project’s scenario and provides more information to students at several points. This video may be downloaded or ordered on a DVD from the BIE website, www.bie.org.

Launching the Project

1. **Students view the first video from Carlos Medine, read the transcript, and discuss it as a whole class.**

The video message is 3 $\frac{1}{2}$ minutes long and contains several important details. In order to more carefully analyze this message, students should also read a transcript.

A transcript of the first video from Carlos Medine may be found in Section IV, *Student Materials*.

The transcript can be projected so it can be read by the whole class. Alternatively, copies of the transcript can be duplicated and passed out to students.

Potential Hurdle: As this video/transcript sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of material.

Synopsis of Video Message: The video shows Carlos Medine, President of the Trilateral Trade

Consortium, welcoming students as economic leaders of their two rival islands, Hatfield and McCoy. He tells students the war between their neighboring islands of Abbydale and Springfield has ended, making it possible for Hatfield and McCoy to establish trade with them. Mr. Medine explains that they will eventually negotiate a trade agreement with Abbydale or Springfield, based on an analysis of which goods and services each island wants to produce. He advises them to prepare for criticism by researching answers to questions about trade. He notes that they will be given two resources after the video: *Research Questions and Technical Report TLC #02-540* and *Table 1: Hours Needed to Produce Each Good*.

Economics Content Note: High school Economics classes often use simulations or games to teach trade. These games have students “trade” and “compete” to see who can get the most tokens. Since the tokens usually represent some type of resource, students often leave these lessons thinking that trade is a game meant to cheat others out of resources. This is not true and is not the lesson to be learned about trade under voluntary exchange. Trade occurs because both parties can gain. Be sure students understand this basic underlying premise of market economies. If students start to develop a “gaming” mentality, coach them to see that economic gains come from trade as a voluntary exchange but not necessarily from competitive games in which you try to gain more than your partner.

Framing the Inquiry

2. Students develop the initial “know” list with the teacher (whole-class discussion).

Students must now assess what they already know about the problem posed in the video. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the video transcript and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the video provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the first “know” list follows.

Example of Initial Know List

What do we know?

- We are economic leaders of two island nations, Hatfield and McCoy
- Carlos Medine is President of the Trilateral Trade Consortium (TTC)
- A 100-year war just ended between Abbydale and Springfield, two neighbor islands
- We were neutral during the war, so we couldn’t trade with either Abbydale or Springfield
- The TTC spoke to our premiers and they would like us to negotiate a trade agreement with Abbydale and/or Springfield
- Medine says trade will improve relations and economic output for all nations involved
- Our premier will contact us soon about what to do
- We’re getting accurate data about how many hours it takes each island to produce things to trade

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- We should figure out what we want to produce and what we'd like Abbydale and/or Springfield to produce
- The people of Hatfield and McCoy do not trust each other and are not expected to trade with each other
- Any trade agreements made between Hatfield and Abbydale and/or Springfield will not affect trade agreements made between McCoy and Abbydale and/or Springfield
- Medine is warning us that many people resist trade and will criticize us
- To prepare for critics, Medine wants us to learn about the benefits of trade
- We have to research some questions about trade
- We will get a paper by the TTC to help our research
- Medine says we should form expert groups to answer each question

Potential Hurdle: Some students may have heard of protests at World Trade Organization meetings or heard about the debate over the pros and cons of free trade. They may ask questions during this unit about the “other side” of the issue of free trade e.g., its possible — and sometimes real — negative effects, particularly on certain segments in a trading nation’s economy. Let them know that this unit is designed to teach the basic *economics* — as opposed to the politics — of trade. The unit’s scenario necessarily involves *learning the economic benefits of* free trade, and so students may have to play the role of someone whose views on the issue are different from their own. Point out that this is one of the best ways to learn how to support and defend your own opinion and that, in order to form a sound argument *against* unregulated trade, one must understand the economic principles underlying the benefits of trade. In other words, unless you understand the concept of comparative advantage, you cannot discuss the pros and cons of trade in an informed way. You may have students investigate the “other side” of free trade on their own, or you may explore the issues with the whole class after **The Greater Good** is completed.

3. Students develop the initial Driving Question with the teacher (whole-class discussion).

Once the first video from Carlos Medine is discussed, and you are satisfied that students understand it, lead students in drafting an initial problem statement. This is generally done as a whole class discussion.

A Driving Question is a succinct declaration of the general problem students are to solve. It takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial statement may look something like:

How can we, as **economic leaders of our islands**, research **the benefits of trade and figure out which goods and services to produce**, so that **we can negotiate a good trade agreement and respond to criticism?**

At this point, it is OK if the Driving Question is somewhat ill-defined. It is not necessary that the Driving Question contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the problem scenario unfold. The part about “respond to criticism” is not vital for the first phase of the problem — it comes into play nearer the end.

4. Students develop the initial need to know list with the teacher (whole-class discussion).

The next step in the problem-solving process is to coach students to identify information they need to know in order to solve the problem statement. Again, guiding students to pay close attention to all parts of the video transcript, create a “What Do We Need to Know?” list. If students are missing a key piece of information about the problem, the content, or their task, ask questions to elicit items for the list. This is critical because everything students are taught in the unit must spring from this list.

At this point in the problem-solving process, students will probably list things that they actually do *not* need to know. Allow students to do so. The class will return to the know/need to know list again later, having learned more about what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of problem based learning is to distinguish what information is and is not necessary to solve the problem. As much as possible, encourage students to identify irrelevant information on their own.

Review the need to know list soon after it is written and think about how you will answer students' questions. Some may be answered right away, or while coaching small groups. Some will require a more formal clarifying lesson for the whole class. Other questions will be answered through independent research and thought by students. As the problem unfolds, coach students to see that some "need to knows" will never be answered and are not actually necessary for developing a reasonable solution to the problem.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Need to Know List

What do we need to know?

- What is the Trilateral Trade Consortium (TTC)?
- Where are Hatfield, McCoy, Abbydale and Springfield?
- Why did Abbydale and Springfield fight a war, and who won? Why did it end?
- What does it mean to "remain neutral" in a war?
- What are we going to be — Hatfield or McCoy — and when will we know?
- What exactly are "economic leaders"?
- What is a "premier"?
- Why do many people resist trade?
- How much power does Carlos Medine have?
- What is a trade agreement?
- Are there really "many benefits" from trade?
- Do we have to — or can we — do more research or do we just read the TTC's paper?
- Why don't Hatfield and McCoy trust each other?
- How do TTC analysts know how long it would take to produce things?
- How will this data help us decide what to trade?

Potential Hurdle: After viewing this video, students may wonder if Carlos Medine and the Trilateral Trade Consortium — and the island nations he refers to — really exist. Tell them the names are fictitious, but they should be reminded that the scenarios were developed to resemble authentic situations.

Problem-Solving and Learning Activities

5. **Students receive memo with three questions to research and are divided into three expert groups. The memo from Carlos Medine with three questions to research may be found in Section IV, *Student Materials*.**

Give each student a copy of the memo from Carlos Medine of the Trilateral Trade Consortium and read it aloud as a whole class. Discuss the memo to be sure everyone understands their task.

Remind students that this research will help answer some of the "need to knows" students listed after viewing the video.

Optional Activity: The first research question in the memo describes an activity that you may wish to *do with the whole class*, before the expert groups start to find answers to their questions. In this activity, students look at the labels on their clothing and other possessions to see where they were made — and a whole class of students creates a greater range of examples of trade.

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Divide students into three “expert groups” and assign each group one of the questions from the memo to answer. Be sure each group contains a good mix of student skill levels.

6. **Students read report on free trade and protectionism and write answers to the question assigned to their expert group (as individuals or in pairs).**

The report on Free Trade and Protectionism may be found in Section IV, *Student Materials*.

Give each student a copy of “Technical Report TCL 302-540, *Free Trade and Protectionism: A Critical Review*” from the Trilateral Trade Consortium. Note that this report will help them answer their research questions. Students may also use a textbook or resources from the library or the Internet. You may give students time in class to work on this task, or assign it as homework, and have students do it individually or in pairs.

7. **Students share and discuss answers to three questions about free trade and protectionism (whole-class discussion).**

Once students have written answers to their research question, ask members of each expert group to share their answers, either as an oral report to the class, or more informally when you discuss each question. Collect their written answers to check for understanding and to assign Credit/grades if you wish.

Economics Content Note: The questions and research are designed to get students thinking about trade and some of the benefits we as a nation and individuals gain from trading with other countries. Because the questions could easily be answered by intuition (e.g., we get cheaper stuff from other countries because we use overseas sweatshop labor), students must ground their answers in the ideas contained in the report or from their economics text and research. Students should not be expected to fully understand all the concepts, instead they should realize that trade has benefits and costs and that economic gains can be made from it.

8. **OPTIONAL: Students revise the know/need to know list (whole-class discussion, or as individuals).**

If you and/or students wish to revisit the know/need to know list, items now could be added based on the research on free trade and protectionism. You could take the time for a whole-class discussion, or you could simply ask students to note this individually. Move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students might have some new items for the need to know list.

9. **Teacher divides students into two groups, the island nations of Hatfield and McCoy.**

Divide the class into two groups of the same size and with a balanced mix of student skill levels. Tell them which island nation’s economic leaders they now are: Hatfield’s or McCoy’s. Emphasize that, since they are rivals and trade negotiations are conducted in “closed-door” meetings, they will need to meet on different sides of the room and not talk about their nation’s plans with students from the other nation. Tell them not to reveal the “secret information” contained in their island’s production data table.

10. **Students receive Table 1 for their island, are told to keep it secret from students in the other island, and review it with the teacher (whole-class discussion).**

Table 1 for Hatfield and Table 1 for McCoy may be found in Section IV, *Student Materials*.

Table 1, Hours Needed to Produce Each Good, is the first piece of information given to the students to help them trade with Abbydale and Springfield. This table tells students how many hours are needed to produce each good that might be traded. If students ask about the availability of other goods, they can be told that the list of goods in *Table 1* represents the goods that are currently being produced on the islands. Other goods are imported and their availability will not change.

Have students look over *Table 1* and explain that each island has different natural, human, and capital resources. This creates differences in production costs (hours in *Table 1*). Students can readily see these different costs of production by adding the hours used to produce each good to find the “Total Hours Needed for Production” (final row of *Table 1*) for each island.

A completed version of *Table 1* for the teacher may be found in Section V, *Teacher Materials*, in “Table Answer Keys.”

Give students a few minutes to calculate the total hours needed for production, working alone or in pairs. To check for accuracy, you could do Springfield and Abbydale together as a class, then task students to compare calculations for their own island with a partner from the same island — *but do not ask students to report out these numbers, since this information should be kept secret from their rival island.*

Note that students, as economic leaders preparing for trade negotiations, now “know” some things about their island’s production compared to Abbydale and Springfield, for example:

- It takes Springfield 211.5 total hours and Abbydale 445 total hours to produce what they need to be self sufficient
- It takes McCoy 178.5 total hours to produce what it needs to be self sufficient
- It takes Hatfield 170 total hours to produce what it needs to be self sufficient
- Springfield is an efficient producer of printers (2.5 hours) and films (8 hours)
- Abbydale is *relatively* most efficient at producing shipping (6 hours)

Economics Content Note: Students should be aware that *Table 1* shows them absolute costs of producing a good — the “absolute” amount of resources needed for production. It tells them how many resources (labor hours) must be given up to produce each good. *They should readily see that it takes some island nations longer than others to produce certain goods.* For example, it takes Springfield fewer hours to produce clothing design (5) than Abbydale (24), Hatfield (23) or McCoy (12). Students should also understand that the differences in productivity — labor used to produce a given output — stem from resource differences between the islands. Students should also be able to link the concept of absolute advantage to production. That is, the island that has the lowest cost of producing a good (i.e., uses the least labor) has an absolute advantage in producing the good because it uses the fewest resources in doing so.

11. Teacher provides clarifying lesson # 1 on resource productivity and use.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for information to include in a mini-lecture.

Economics Content Note: In this lesson emphasize the following economic ideas and thinking:

- The quality and quantity of a country’s resources determines how much it can produce.
- Some resources are more productive than other resources.
- Resources that are more productive are worth more.
- An absolute advantage exists when a country uses fewer resources than another in producing a good.
- If a country is using all its resources (i.e., none are unemployed), tradeoffs in production must occur.

12. Students receive Table 2 for their island and calculate opportunity costs (in small groups).

Table 2 for Hatfield and Table 2 for McCoy may be found in Section IV, Student Materials.

Have students work again in small groups to complete *Table 2, Opportunity Costs of Production and Comparative Advantage.*

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Economics Content Note: Use *Table 2* to reinforce the distinction between absolute advantage, which is shown by the hours used in production in *Table 1*, and comparative advantage, which is shown by the opportunity cost of production in *Table 2*. Students must ultimately be able to see that the numbers in *Table 2* represent the key to trade because they will determine which country has the lowest opportunity cost of producing the goods.

Students compute opportunity cost using a three-stage process:

- Look on *Table 1* to find which good in each column (on each island) uses the fewest hours in production (the “lowest-cost” good)
- Determine how many hours it takes to produce this good
- Divide the hours needed to produce each good by the hours it takes to produce the “lowest-cost” good.

Fill in the table by doing this for each of the islands to see how much of the lowest-cost good must be given up on each island to produce other goods.

For example:

- For Hatfield, the lowest-cost good is construction.
- It takes Hatfield 2 hours to produce construction.
- It takes Hatfield 8 hours to produce fruits and vegetables, which when divided by hours equals an opportunity cost of 4 hours .

That is, 4 hours of construction must be given up in order to produce 50 pounds of fruits and vegetables

Now have students do the final step to complete Table 2: circle the lowest number in each row. This shows which island has the lowest opportunity cost — that is, the comparative advantage — for producing that good.

A completed version of Table 2 for the teacher may be found in Section V, *Teacher Materials*, in “Table Answer Keys.”

Potential Hurdle: The tables will be much more meaningful if students see them as a means to determining the information needed to trade with Abbydale and Springfield than if they see them as worksheets for computations. This may take frequent reminders and coaching to show students how the information on these tables is necessary for effective trading.

Economics Content Note: Once students circle the lowest number in each row of *Table 2* they should be able to readily see and understand the concept of comparative advantage. Use *Table 1* to illustrate the tradeoffs made in production for each island *without* trade, and *Table 2* to illustrate the tradeoffs made in production when countries *do* trade. Comparative advantages stem from production differences between countries. Because the opportunity cost — what production must be given up — of producing each good differs for each country, gains exist from specializing production and trading for goods that are not produced. The nation produces what it does relatively best and trades for goods it does not produce. For this exchange to work, the island with the comparative advantage — the lowest opportunity cost — produces the good for all nations and trades the goods for other goods that other countries produce. When countries specialize production in goods that have the lowest relative cost (i.e. opportunity cost of production is lower) and trade for goods that other countries produce at lower relative cost, the total amount of production increases. As a result of this process, overall efficiency is increased — the same resources can be used to produce more goods.

13. **Teacher provides clarifying lesson # 2 on comparative advantage.**

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for information to include in a mini-lecture.

Economics Content Note: In this lesson emphasize the following concepts:

- Specialization
- Trade
- Comparative Advantage (concept)
- Comparative Advantage (computation)

14. **Students individually write first Project Log entry, answering the following questions:**

What is the difference between comparative advantage and absolute advantage? Why is comparative, not absolute advantage, used to determine which goods we produce and trade?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

15. **Teacher reviews individual Project Log entries to assess understanding of economic concepts.**

For tips on reviewing Project Logs, see “Formative Assessments...” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: This Project Log is designed to check whether or not students understand and can correctly use the concepts of specialization, trade, and comparative advantage. These concepts lie at the core of the unit and are key to understanding why gains from trade are possible — but they are difficult concepts to master. *Table 2*, clarifying lesson #2, and the project log all provide students with an opportunity to see how specialization of production in relatively low cost goods (those for which the country holds a comparative advantage) produces gains from trade. Students should understand these concepts well enough to be able to readily apply them to different situations. For example, students should see that it does not matter if a country has a trade deficit, since importing more goods than what is exported merely reflects voluntary exchange from which all benefit. If students do not have an in-depth understanding of these concepts, clarifying lesson #3 can be used for reinforcement.

16. **Teacher provides clarifying lesson # 3 on specialization and trade.**

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for information to include in a mini-lecture.

Economics Content Note: In this lesson emphasize the following concepts:

- Specialization
- Trade
- Comparative advantage
- Money as a medium of exchange
- Trade deficits

Potential Hurdle: Students may have trouble seeing that a comparative advantage does not exist when opportunity costs are identical for two or more countries. Students should be coached to see that in these cases production could occur on one or more islands.

17. **Students receive Table 3 for their island and determine reduction in hours with specialization and trade (in small groups).**

Table 3 for Hatfield and Table 3 for McCoy may be found in Section IV, *Student Materials*.

In *Table 2*, students were asked to designate the island that is the low-cost producer of each good. *Table 3, Why Trade is Good*, will show students how many resources are saved with specialization and how much production

can increase using the same resources. In this table, students compute the total cost of producing the goods with specialization and trade by filling in the cost of production by the island that is the low-cost producer (identified in *Table 2*). By comparing the total cost of production *with* specialization and trade (*Table 3*) with the total cost that each island bears without trade (*Table 1*), students will see that specialization and trade lowers the total cost of production for all countries.

For example (*Remember, do not reveal the actual numbers for Hatfield and McCoy to students, who must not know the other island's production data*):

- *Table 2* shows that Springfield has the lowest opportunity cost for clothing design — 2.0 hours .
- In *Table 1*, Springfield only needed 5 hours for clothing design of 25 garments, which is much lower than what Hatfield and McCoy needed.
- In *Table 3*, students enter 5 hours in the row for clothing design, because they can trade for that with Springfield.

A completed version of Table 3 for the teacher may be found in “Table Answer Keys” in Section V, *Teacher Materials*.

Potential Hurdle: Students will readily see that hours, and hence costs, are reduced with specialization and trade. However, they may need some coaching to see that the hours saved can be used either to increase the number of goods and services produced by putting the resources back into production, to increase research and development of new goods and services, or to increase leisure (i.e. laborers can produce the same amount by working less).

Economics Content Note: Students should now be comfortable with the notion that specializing production and trading for goods that are not produced yields an economic advantage. If they are not, they will have difficulty understanding how to complete Table 3. Should this occur, reinforce the concepts of comparative advantage, specialization, and trade.

18. Students view second video from Carlos Medine, and read the transcript (wholeclass discussion)

The video message is $2\frac{1}{2}$ minutes long and contains several important details. In order to more carefully analyze this message, students should also read a transcript.

A transcript of the second video from Carlos Medine may be found in Section IV, *Student Materials*.

Synopsis of Second Video Message: The second video message from Carlos Medine tells students that they will not be able to trade with Abbydale or Springfield because war between them has broken out once again. The premiers of Hatfield and McCoy, however, have decided to try to put aside their mutual distrust and negotiate a trade agreement between their islands. This switch in trading partners occurs so that students realize the trading difficulties that arise when the production costs are unknown (i.e. under uncertainty) — as is often the case in the real world when nations negotiate trade agreements.

Potential Hurdle: Students must be well-grounded in the economic reasoning behind trade before negotiating with their rival. For curriculum goals to be met, students cannot view trade as trying to cheat one country (or person!) out of resources.

19. OPTIONAL: Students revise the Driving Question with the teacher (whole-class discussion).

This step is optional because the basic problem has not changed too much — it's only the trading partner that has changed. After watching the second video from Carlos Medine, ask students if they think they need to revise the Driving Question. The new statement could be something like:

How can we, as **economic leaders of our islands**, put aside **our distrust and decide which goods and services to produce**, so that **we can negotiate a trade agreement that benefits both nations**?

20. OPTIONAL: Students revise the know/need to know list with the teacher (wholeclass discussion, or as individuals).

Revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students should have some new items for the need to know list. You could take the time for a whole-class discussion, or you could simply ask students to note this individually.

The revised know/need to know list might include the following new items:

Sample Items for Revised Know/Need to Know List

What do we know?

- *(previously listed items)*
- Abbydale and Springfield are at war again
- We will not be able to negotiate any trade agreements with them
- Our premiers now want to have a trade agreement
- The TTC likes this idea
- Our premiers have bad attitudes about each other’s people
- Both premiers think trade is good for production and efficiency and will benefit both islands
- We need to decide what each island will produce, but not how much — TTC economists will do that
- We have 15 minutes to negotiate
- The agreement must be fair and honest and benefit both of us
- We should try to overcome our distrust — but still be careful

What do we need to know?

- *(previously listed items)*
- Why did the war start again?
- Why do our premiers suddenly want us to trade? Are they going to profit?
- Will trade be good for both islands’ production and efficiency?
- How do we negotiate?
- Who do we negotiate with?
- Why do we distrust each other so much?
- When do we start?
- Can we plan what to do in advance?

21. Students decide which goods would be most efficient to produce by their island (in small groups).

Before starting negotiations for trade, form students from the same island into small groups of 3 to 5. They need to decide which goods they want to produce, which goods they want the other island to produce, and which goods they are uncertain whether to produce or not. Ask them to use information from *Table 2*, where they circled the island with the comparative advantage in producing each good. They should try to trade the items their island has the comparative advantage in producing for other items that they do not produce as efficiently.

Economics Content Note: Make sure students ground their decision according to their comparative advantage. While students might choose to produce goods for non-economic reasons, they should understand the costs of not choosing to produce only the goods for which they have a comparative advantage. Should students not understand the criteria for deciding which category each good falls into, they should be coached to see that production costs differ and that they want to produce goods with lowest opportunity costs and trade for those goods with the highest opportunity costs.

22. Students negotiate trade agreements using the Trade Agreement worksheet (in foursomes, two from each island).

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The Trade Agreement worksheet may be found in Section IV, Student Materials.

Two students from McCoy should be paired with two students from Hatfield to negotiate the trade agreement. Give each group of four one copy of the *Trade Agreement* worksheet and remind students to use the information from the tables to determine which goods their island wants to trade. To help students begin trade, have them offer their lowest cost good in exchange for their highest cost good.

Limit the negotiation of trade to a maximum of 15 minutes. In the “real world” trade deadlines are imposed, so the 15 minute limitation simulates this experience. It also provides students with an example of why all the gains from trade might not be realized under time constraints. During the debriefing, students should be coached to see that gains from trade exist even with “real world” imperfections of uncertainty in cost structures and time limitations.

Students should also recognize that the offer and counteroffer in negotiation elicits information about costs. Because economic gains can be made with specialization and trade, both parties have an incentive to let the other island know which goods they want to produce, but they do not necessarily have the incentive to let them know how low their costs are.

At the end of the 15 minute negotiations, students should sign their Trade Agreements and turn them in to the teacher (acting as “Carlos Medine’s assistant”).

A sample of one potential Trade Agreement may be found in Section V, Teacher Materials.

Economics Content Note: Gains from trade can be illustrated using a blank *Trade Agreement*. Students may use this as a worksheet to calculate the hours of production needed after trade. If negotiations are grounded in cost considerations, the total hours needed to produce the goods will be less than those needed by either Hatfield or McCoy if they produced the goods alone (*Table 1*). If hours in production increase, the computations can be used as a springboard to show how trade that is not grounded in low-cost production is inefficient.

23. Students view video from Ellis McClure on disadvantages of trade and discuss it as a whole class.

The video message is 3 : 15 in length and contains several important details. In order to more carefully analyze this message, students should also read a transcript.

A transcript of the video infomercial from Ellis McClure may be found in Section IV, Student Materials.

After students have completed their trade negotiations, they should be brought together and shown the infomercial by Ellis McClure, who presents students with arguments against trade. Tell students this infomercial has been shown on television on both islands, and they need to be aware of it as economic leaders and trade negotiators — and remind them that Carlos Medine warned about this in his first message. Ellis McClure speaks for the employed workers of the island and informs his viewers that, in the short run, some employed workers will lose their jobs with trade.

Economics Content Note: Ellis McClure’s emphasis on tariffs, quotas, and voluntary restraint agreements ignores the opportunity costs (in terms of foregone goods and services) that will be borne in the long run with trade barriers. Students should be coached to see that using trade barriers to restrict trade has a cost and that they should weigh the costs and benefits of their actions before making a decision.

24. Students review flier against trade (whole-class discussion).

A copy of the flier may be found in Section IV, Student Materials, or an electronic version is on the BIE website at www.bie.org.

As part of his infomercial, Ellis McClure tells students that lobbying groups have prepared a flier on why trade is harmful. Because this flier will ultimately be used to discuss their task in the last stage of the problem, lead a discussion with students focusing on the flier’s strengths (e.g. highlighting relevant information) and weaknesses (e.g. biased and misleading information). Since students do not know at this point in the problem that they will be required to make a flier, the discussion should be couched in terms of a general analysis and presentation of material — not a specific “how you need to make your flier” lesson. Later, you can tell students this is an example of what NOT to do — i.e., use non-economic arguments.

Optional: You and your students may wish to add items to the know/need to know list at this point.

25. Teacher provides clarifying lesson # 4 on benefits and costs of tariffs, quotas, and voluntary restraint agreements.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review, Lecture Outlines* and *Lectures* in Section V for information to include in a mini-lecture.

Economics Content Note: In this lesson emphasize the following ideas and economic ways of thinking:

- the benefits of trade in the long run
- the short term costs of trade
- ways to inhibit/prohibit trade
 - tariffs
 - quotas
 - voluntary restraint agreements (aka voluntary export restraints)
- using benefits and costs to determine policy

26. Students individually write second Project Log entry, answering the following question:

What are the benefits and costs of restricting trade?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

Economics Content Note: The Project Log is designed to ensure that students see the potential short term costs of trade. While in the long term specialization and trade will produce economic gains for all countries involved, these benefits will be fully realized only after resources can be fully employed in the industries in which the island nation has a comparative advantage. In the short run, resources cannot necessarily be redeployed from their current use into the use that will produce the maximum gains from trade.

27. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

See Section II, *Project Based Learning and Project Based Teaching*, in “**Formative Assessments...**” for tips on reviewing Project Logs.

28. Students view third video from Carlos Medine, and read the transcript (wholeclass discussion).

The video message is 2 minutes long and contains several important details. In order to more carefully analyze this message, students should also read a transcript.

A transcript of the third video from Carlos Medine may be found in Section IV, *Student Materials*.

Carlos Medine, in his third video message, presents students with the final twist in the problem. He informs students that mass protest has erupted on both islands over their trade agreement and, as the economic leaders of their islands, they must prepare a flier that justifies why trade benefits their nations.

29. Students finalize the Driving Question with the teacher (whole-class discussion).

Revisit the Driving Question one last time, to incorporate the final twist in the problem. The final Driving Question should be something like:

How can we, as **economic leaders of our islands**, create a flier **that uses economic theories to justify free trade and address protesters’ concerns**, so that **common citizens understand the benefits of trade**?

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30. Students finalize the know/need to know list with the teacher (whole-class discussion).

For one last time, revisit the know/need to know list as a whole class and move any items that are now “known” from the “Need to Know” to the “Know” side of the list, or mark them with a check. In addition, students should have some new items for the need to know list.

The final know/need to know list might include the following new items:

Sample Items for Final Know/Need to Know List

What do we know?

- *(previously listed items)*
- Lots of people are protesting after we negotiated our trade agreement
- Labor union members and environmentalists have taken to the streets
- We need to make a flier for a public relations campaign
- Our flier must explain economic theories in common terms
- We need to show the benefits of trade and explain how it’s for the “greater good”
- We must consider each group’s concerns
- They will ignore fancy slogans and slick graphics
- We cannot change the trade treaties
- Mr. Medine hopes we can calm people down

What do we need to know?

- *(previously listed items)*
- What are “unprotected industries”?
- What is an “agitator”?
- Will trade really hurt the environment or workers?
- How can we explain economic theories in words common citizens understand?
- Can we use pictures?
- What does “greater good” mean?
- What happens if people don’t calm down?

31. Teacher shares supplied rubric with students to guide their work.

A rubric for the flier may be found in Section V, Teacher Materials, in “Assessment Tools.”

Give a copy of the rubric to each student, or display it on an overhead or computer projector so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their writing and graphic design skills, while important, are given less weight on the rubric. If you are altering the rubric’s point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Presentation, Assessment, and Debrief

32. Students create flier defending the trade agreement (individually, in pairs, or in small groups).

Students can either develop their fliers individually, in pairs, or in the small, mixed-island groups that negotiated the trade agreement. If students create the fliers individually, it will give you an opportunity for individual assessment in addition to the multiple choice test included with this unit.

In developing this flier, students should be coached to see that Ellis McClure’s flier is an example of a political message presented in flier form. Remind students as they write their fliers to draw upon any research they undertook

describing the benefits of trade, including the “TTC Report” handed out earlier, *Free Trade and Protectionism: A Critical Review*, added to what they have learned from mini-lectures, textbooks, and other resources about economic theories, principles, and concepts. To coach students in how to create an effective flier, discuss the basics of presenting information in this format, as described on the rubric. You could also direct students to online resources such as Microsoft Office, which has a PowerPoint “Template for Recommending a Strategy.”

For other ideas for what students could create instead of a flier, such as a TV commercial storyboard or proposal for a web page, see “Teaching Tips” below.

Economics Content Note: Creating the flier serves two purposes. First, it helps students learn the art of persuasion — but not “slick” propaganda — using complex theories and principles. Second, it helps students understand the benefits and costs of trade by forcing them to present an argument defending their trade agreement to groups opposed to it.

Potential Hurdle: Remind students they are the economic leaders of Hatfield or McCoy and their flier is supposed to use economic principles to deflect criticism of their trade agreement. Students often forget that they are an island nation and, as a result, develop a flier on trade from the viewpoint of the United States.

33. Students present and compare fliers (whole-class discussion).

Have students present their fliers for each other’s review. Because it may be difficult for a whole class to see a flier shown from the front of the room — and there may not be enough time for each flier to be presented with an oral explanation — you might as an option consider using a “gallery walk” as an effective alternative strategy. Have students post their fliers around the room, then have students walk around to look closely at as many as possible. Or, you may just have students pass their fliers around for review, using a system to make sure each flier is reviewed by a sufficient number of peers. Ask students to refer to the rubric and record notes about what they see, noting strengths, weaknesses, proper use of key economic terms, particularly good explanations of economic concepts, good use of visuals and design, etc. In addition to the rubric, you could also create a checklist of economic terms students are to look for, with room to write comments on how accurately and effectively the terms are used.

34. Teacher uses supplied rubric to assess fliers.

The rubric for the flier may be found in Section V, *Teacher Materials*, in “Assessment Tools.”

As you review the students’ fliers, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

35. Teacher conducts a debrief to clarify and consolidate students’ understanding of key economic concepts (as necessary).

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students’ solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

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Economics Content Note: Since the goal of this project is to place trade negotiation within the context of opportunity costs, comparative advantage, and specialization, be sure students understand the following:

- The relationships among production costs, specialization, comparative advantage, and economic gains from trade. Comparative advantages arise because the opportunity cost of production differs among nations and, because of these differences, gains can be made from trade.
- Short-term costs also arise from trade and nations must weigh the long term benefits against the short term costs when structuring trade policy.

36. Teacher manages student reflection on the 21st century skills practiced and the process of learning in PBL.

Students should have a chance to discuss the process of learning in PBL, and to reflect on their use of 21st century skills such as critical thinking, collaboration, and presentation. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible “right answers” to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

37. Teacher uses supplied multiple-choice test to assess individual students’ knowledge of key economic concepts.

The multiple-choice test for this unit may be found in Section V, *Teacher Materials*, in “Assessment Tools.”

38. Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.

Teachers inevitably recognize how to make **The Greater Good** more effective after they have taught it. We encourage you to note these thoughts quickly, so they can review your ideas for improvement the next time you teach the unit.

• **Teaching Tips**

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school economics teachers. We include below their advice about avoiding potential problems in **The Greater Good**.

- **Do not try to change the data on hours of production.** The goods selected and the hours of production illustrate the potential for specialization and provide intuitively appealing examples of how comparative advantage arises in each country. Without interconnections between the goods produced and the data, students might have more difficulty seeing the relationships between production, opportunity costs, comparative advantage, specialization, and trade.

- Do not try to make the lesson more “interesting” by using trading tokens or by having students make gains for their island at the expense of the other island. By portraying trade as a game that is to be “won,” students will not see that economic gains result from trade and that voluntary exchange can often benefit *all* parties involved.
- We also caution against turning the Trade Agreement negotiation into a game of “who uses the fewest hours in production.” Comparing each island’s hours of production after trade is not a realistic portrait of “most gained” from trade since McCoy begins trade needing more hours to produce goods than does Hatfield.

- **Extensions to the Unit**

Consider the following economics content-related extensions:

- This unit is also a good opportunity to illustrate that trade can facilitate economic development in a third world country. Trade does not necessarily mean exploitation of a third world country. It can mean gains for both countries since the third world country can use the gains from trade to invest in and develop its economy.
- To provide choices or as an alternative to a flier created on paper, students could create a storyboard for a television infomercial, or a proposal for a page on a website. This should contain the same information and serve the same purpose as the flier. Both of these media are plausible in the project’s scenario — leaders of island nations might communicate with citizens in this way. They would probably not, in such an urgent situation, produce a lengthy TV program, which would take time and might not be watched by a large enough portion of the population. (A newspaper Op-Ed piece is also plausible, but since students wrote one of these for **The Invisible Hand** you may not want to repeat the task.)

Student Materials

Transcript of First Video Segment of Carlos Medine

(Entry Document)

VOICE-OVER NARRATOR: Present at this meeting today are the economic leaders of the islands of Hatfield and McCoy and Mr. Carlos Medine, the President of the Trilateral Trade Consortium. President Medine is about to describe a recent event that could potentially open up new trade avenues for these two islands.

CARLOS MEDINE: Welcome to all of you. Because you are the economic leaders of the two islands of Hatfield and McCoy, it’s my privilege to be able to address you today with some important information. As most of you know, the 100-year-old war between your neighboring islands of Abbydale and Springfield has finally come to an end. Because each of your islands chose to remain neutral during the war, you have not been able to trade with them. But now that peace is here, both of you are free to begin trade—trade that will improve relations and economic output for all of the island nations involved.

Today, I discussed this matter with the premiers of your two islands. Each of them wants you to negotiate a trade agreement with Abbydale or Springfield or both. My aides will soon be distributing information that will help you reach such an agreement quickly.

This data will tell you the number of hours it takes each island to produce the items to be traded. Use these numbers to figure out which goods and services you want to produce yourselves and which you want Abbydale or Springfield to produce. Our economic analysts at the Trilateral Trade Consortium are extremely thorough in their research, so you can rest assured that the hours are estimated accurately.

It’s been brought to my attention that the people from your own two islands do not trust each other. That’s unfortunate, but because of this hostility, the people of Hatfield will not be expected to trade with the people of McCoy. Also, any trade agreements between Hatfield and Abbydale or Springfield will not affect trade agreements made by McCoy, and vice versa.

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I'm sure you all know that many people resist trade, any kind of trade, so don't be surprised if you hear instant criticism when you begin talking about opening up your island to trade. To prepare for this, you should probably familiarize yourself with the many benefits that can result from trade. I realize that most of you are economists, but because you've been isolated for so many years, it's possible that you're not aware of the many arguments favoring trade. With that in mind, I've asked my aides to develop a series of questions for you to research. By focusing on these questions in economic theory, you should quickly see how trade could benefit both of your islands.

The quickest and best way for you to gain expertise in this area is to form "expert" groups that address each question. My aides are also distributing a technical paper developed by the Trilateral Trade Consortium that might help your research efforts.

Your premiers will be contacting you soon to tell you how to proceed with the trade negotiations. We at the Trilateral Trade Consortium wish you well.

Memo

From the Office of Carlos Medine, President Trilateral Trade Consortium



My staff has compiled three questions and resource materials that should help you prepare for deflecting criticism about your upcoming trade with Abbydale and Springfield. It is probably most efficient for you to form expert groups to research and write answers to each question. Each expert group can research one question and share its findings with other groups. In this way all economic leaders on your island will be well-versed in the principles and concepts of free trade. Your reasoning and answers to each of the questions must be clear and correct for you to be able to debate the criticism against opening trade. In fact, without understanding the economics of trade, your island may not be able to realize all of the potential gains from trade.

The questions to be addressed are written below. To help guide your research, I have attached Technical Report TLC #02-540, written and distributed by the Trilateral Trade Consortium, to help educate individuals and countries on the benefits and concerns of free trade.

WHY DO GOODS COME FROM OTHER COUNTRIES?

Look at the labels on your shirts, sweaters, jackets, or backpacks. Notice these products are made in countries other than the United States. Explain why so many products we use come from different countries.

WHY DO WE EMPLOY WORKERS FROM OTHER COUNTRIES?

The workers in the United States can enter data more efficiently than can the workers in India. Yet, we send much of our data to India to be entered. Why is this? List and discuss the benefits to workers in the United States from people in India doing data entry.

WHY DO COUNTRIES DESTROY NATURAL RESOURCES?

Costa Rica has rich rain forests and plentiful natural resources, but it has workers with little education. The easiest way for Costa Rica to earn income in international markets is to cut down the rain forests, turn them into grazing lands, and sell the wood products. Explain why preventing Costa Rica from cutting down rain forests would hurt their economy.



TECHNICAL REPORT SERIES
International Trade Focus

Free Trade and Protectionism: A Critical Review

Technical Report TLC #02-540
The Trilateral Trade Consortium

Abstract

As consumers or producers, we have an interest in trading with other countries. As consumers, trade allows us to get a greater abundance and variety of products at lower prices. As producers, trade allows us to increase our profits by increasing our production through exports. While there are tremendous economic benefits to free trade, there are political benefits to developing policies that restrict trade. A country uses protective tariffs, quotas or voluntary restraints to preserve or strengthen certain industries, including those that could be essential for defense or war. In an uncertain world, the political-military objectives of self-sufficiency may need to take precedence over economic objectives of efficiency in the allocation of world resources.

Free Trade and Protectionism: A Critical Review

Technical Report TLC #02-540

The Trilateral Trade Consortium

6.1. THE GREATER GOOD

Every time we walk into a record store, restaurant, or any other place of business to buy something, we trade. It does not matter whether the goods we are buying were produced across the street or across the Rio Grande. Trade simply involves exchanging one set of items for another. In most cases, money is the medium used to exchange goods. International trade, or trade among countries, does not differ from trade with other people in the same country. The key to understanding trade is to remember why it takes place. The reason people trade, either within one country or between countries, is because they believe they would be better off by trading. When we consider the alternative—everyone producing whatever they want themselves—trade makes sense.

The process of importing (bringing goods into the country) and exporting (sending goods to other countries) creates a bigger variety of goods and services because it permits countries to specialize in what they do best. By specializing in the goods it can produce the most efficiently—for the lowest possible cost—a country can increase production. By distributing those goods to firms and individuals throughout the world, businesses have the opportunity to increase sales and profits. Increased profit often means increased wages for the work force and additional investment in plants and equipment. Increased efficiency often means lower prices for consumers.

Without trade, countries become isolated. The isolation reduces the number of goods and services as compared to countries that do trade. This can be seen in former Soviet block countries. Once they opened their borders to trade, the number of goods available, the quality of goods, and the production of exported goods all increased.

The benefits from trade can be explained using the economic principles of absolute and comparative advantage. For example, suppose dentists are better at filling teeth and typing letters than are their assistants because it takes dentists less time to perform these functions. In economic language, dentists have an “absolute advantage” both in filling cavities and typing. If we stopped here, we might say dentists should do both because they are better at both. However, trade benefits everyone, even when one person (or country) has an absolute advantage in producing almost everything. The gains from trade depend on a concept that economists call “comparative advantage.”

According to comparative advantage, dentists should specialize in their strongest skills, filling cavities, and assistants should specialize in typing. With this specialization, more will be produced than if each tried to do both tasks alone. If they earn wages based on how much produce they will both be better off by specializing in their strongest skills because they now produce more. Specializing in what they do best and then trading their service for the other things they need will make both parties better off.

The Benefits of Free Trade

To benefit from international trade, countries must specialize, as the dentist and the assistant did. Because countries have only a finite quantity of resources, producing more of one good means they have to produce less of another. Every country has a unique combination of resources (land, labor, capital, and entrepreneurship) just like the dentist and the assistant have unique talents and knowledge. The amount and type of resources in a country determines what goods and services it can produce most efficiently.

Through trade, countries exchange goods they produce more efficiently for goods that other countries produce more efficiently. Just like both the dentist and the assistant benefitted from free trade when they specialized in what they produce most efficiently, countries benefit from specialization and trade. It can be a win-win situation for all participating countries because everyone has more and standards of living are raised.

The Costs of Free Trade

Because trade benefits all countries, we might expect that everyone would be in favor of free trade and permit goods and services to flow freely across borders. However, there are people who want to erect barriers against trade, usually for reasons of “protectionism.”

Protectionists—those who favor restraints on trade—argue that opening borders to trade with other countries will cause people to lose their jobs. Because a country will not produce some goods once they specialize and trade, some jobs will initially be lost with trade. However, over time, trade creates new jobs in the industries in which production is specialized.

Another reason often given for erecting barriers to trade is to “protect” certain industries. The argument is that new or young industries must have time to establish themselves from the competition of more mature industries

abroad. Arguments are also made that production in certain industries, like military goods, is essential in times of world conflict. Erecting barriers to trade will shelter these industries from international competition so that domestic production of the goods will occur.

An example may best illustrate how trade barriers work. Suppose the United States imposes high tariffs (taxes) on imported steel to protect the U.S. steel industry from foreign competition to 1) save the jobs of the steel workers, and 2) ensure that we have steel in case economic or military conflicts occur. By limiting competition, the price of steel will rise, profits for owners of steel mills will increase, and thousands of jobs in the U.S. steel industry will be saved.

Higher steel prices also means that U.S. firms using steel to produce their goods (automobiles for example) will have increased costs. Some of these costs will be passed on to consumers in the form of higher prices, others will result in lower profits and job losses. Also, because people have to pay more for cars (for example) when steel prices go up, they have less money to spend on other things they want to buy—CDs, clothing, food or entertainment. Industries and consumers that have nothing directly to do with steel production will suffer.

A similar argument for creating barriers to trade focuses on protecting the nation's workers from the competition of cheap foreign labor in low-wage countries. Trade barriers will, in fact, increase wages for domestic workers in the short run. However, better management and technology, better roads, bridges and communications, and more productive workers are efficient ways to maintain high wages.

For example, suppose the U.S. computer industry has to pay workers \$12 per hour to assemble computers but the Mexican computer industry only has to pay \$2 per hour. At first it seems like the U.S. computer manufacturers should move to Mexico for its cheap labor. However, technology may be so good in the U.S. that workers can produce 55 computers per hour while Mexican workers can only produce 5 computers per hour. Even without counting the benefits of a more advanced transportation system, better communication and management, and a more stable economic and political environment, the computer manufacturer is better off staying in the U.S. than moving to Mexico.

Finally, some individuals argue that trading with poorer countries that have lax environmental laws endangers the earth's environment. This too may be true in the short run. Most poor countries that can barely feed their people put a lower priority on preserving the environment and a higher priority on production of staple goods, such as food. As production in poor countries grows, pollution and environmental destruction could get worse in the short run. However, over time as they continue to grow, accumulate wealth, and satisfy their basic needs, countries will have more resources and, perhaps, a greater commitment to environmental preservation.

Summary

Arguments can be made for and against free trade. However, over time, the economic benefits of free trade are greater than the costs. Trade creates specialization in production, increased efficiency, and more goods and jobs. Prices of goods and services are lower and consumption is greater. Of course, in the short run, some costs may result. However, these costs are relatively small compared to the higher level of living in our nation and for our trading partners.



TABLE 6.3: Table 1: Hours Needed to Produce Each Good

Industry	Quantity Produced on Each Island	Hours Needed to Produce Each Quantity Hatfield	Hours Needed to Produce Each Quantity Springfield	Hours Needed to Produce Each Quantity Abbydale
Fruits and Vegetables	50 pounds	8	20	27
Clothing Design	25 garments	23	5	24
Chemists	50 prescriptions	17	22.5	20
Farm Equipment	30 machines	12	20	21
Advertising	5 slogans	10	12	30
Science Technology	10 innovations	19	25	66
Communication Technology	300 phone calls	21	27	28
Energy	1 million kilowatts	6	15	20
Shipping	20 tons	4	5	6
Construction	50 buildings	2	7.5	27
College Education	30 courses	15	23	48
Films	15 scenes produced	14	8	45
Meat and Poultry	50 pounds	6	9	36
Recording Artists	30 tapings	10	10	27
Printers	100 copies	3	2.5	18
Total	Hours Needed for Production			

How Long it Takes Each Country to Produce Each Good as Compared to its Lowest-Cost Good

TABLE 6.4: Table 2: Opportunity Costs of Production/Comparative Advantage:

Industry	Quantity Produced on Each Island	Opportunity Costs Within Each Island Hatfield	Opportunity Costs Within Each Island Springfield	Opportunity Costs Within Each Island Abbydale
Fruits and Vegetables	50 pounds			
Clothing Design	25 garments			
Chemists	50 prescriptions			
Farm Equipment	30 machines			
Advertising	5 slogans			
Science Technology	10 innovations			
Communication Technology	300 phone calls			
Energy	1 million kilowatts			
Shipping	20 tons			
Construction	50 buildings			
College Education	30 courses			
Films	15 scenes produced			
Meat and Poultry	50 pounds			
Recording Artists	30 tapings			
Printers	100 copies			

Numbers for each island tell us how much goods cost to produce compared to other goods produced on the same island. *Circle the lowest number in each row*, to show which island has the lowest opportunity cost—the comparative advantage—for producing that good.

Reduction in Hours with Specialization and Trade

TABLE 6.5: Table 3: Why Trade is Good:

Industry	Quantity Produced on Each Island	Hours if the Island With the Lowest Opportunity Cost Produces the Good
Fruits and Vegetables	50 pounds	
Clothing Design	25 garments	
Chemists	50 prescriptions	
Farm Equipment	30 machines	
Advertising	5 slogans	
Science Technology	10 innovations	
Communication Technology	300 phone calls	
Energy	1 million kilowatts	
Shipping	20 tons	
Construction	50 buildings	
College Education	30 courses	
Films	15 scenes produced	
Meat and Poultry	50 pounds	
Recording Artists	30 tapings	
Printers	100 copies	
Total Hours Needed for Production		



TABLE 6.6: Table 1: Hours Needed to Produce Each Good

Industry	Quantity Produced on Each Island	Hours Needed to Produce Each Quantity McCoy	Hours Needed to Produce Each Quantity Springfield	Hours Needed to Produce Each Quantity Abbydale
Fruits and Vegetables	50 pounds	24	20	27
Clothing Design	25 garments	12	5	24
Chemists	50 prescriptions	8	22.5	20
Farm Equipment	30 machines	18	20	21
Advertising	5 slogans	18	12	30

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TABLE 6.6: (continued)

Industry	Quantity Produced on Each Island	Hours Needed to Produce Each Quantity	Hours Needed to Produce Each Quantity	Hours Needed to Produce Each Quantity
Science Technology	10 innovations	3	25	66
Communication Technology	300 phone calls	10	27	28
Energy	1 million kilowatts	12	15	20
Shipping	20 tons	4	5	6
Construction	50 buildings	6	7.5	27
College Education	30 courses	9	23	48
Films	15 scenes produced	20	8	45
Meat and Poultry	50 pounds	15	9	36
Recording Artists	30 tapings	15	10	27
Printers	100 copies	4.5	2.5	18
Total	Hours Needed for Production			

How Long it Takes Each Island to Produce Each Good as Compared to its Lowest-Cost Good

TABLE 6.7: Table 2: Opportunity Costs of Production/Comparative Advantage:

Industry	Quantity Produced on Each Island	Opportunity Costs Within Each Island McCoy	Opportunity Costs Within Each Island Springfield	Opportunity Costs Within Each Island Abbydale
Fruits and Vegetables	50 pounds			
Clothing Design	25 garments			
Chemists	50 prescriptions			
Farm Equipment	30 machines			
Advertising	5 slogans			
Science Technology	10 innovations			
Communication Technology	300 phone calls			
Energy	1 million kilowatts			
Shipping	20 tons			
Construction	50 buildings			
College Education	30 courses			
Films	15 scenes produced			
Meat and Poultry	50 pounds			
Recording Artists	30 tapings			
Printers	100 copies			

Numbers for each island tell us how much goods cost to produce compared to other goods produced on the same island. *Circle the lowest number in each row*, to show which island has the lowest opportunity cost—the comparative advantage—for producing that good.

Reduction in Hours with Specialization and Trade

TABLE 6.8: Table 3: Why Trade is Good:

Industry	Quantity Produced on Each Island	Hours if the Island With the Lowest Opportunity Cost Produces the Good
Fruits and Vegetables	50 pounds	
Clothing Design	25 garments	
Chemists	50 prescriptions	
Farm Equipment	30 machines	
Advertising	5 slogans	
Science Technology	10 innovations	
Communication Technology	300 phone calls	
Energy	1 million kilowatts	
Shipping	20 tons	
Construction	50 buildings	
College Education	30 courses	
Films	15 scenes produced	
Meat and Poultry	50 pounds	
Recording Artists	30 tapings	
Printers	100 copies	
Total Hours Needed for Production		

Transcript of Second Video of Carlos Medine

VOICE-OVER NARRATOR: Carlos Medine, the President of the Trilateral Trade Consortium, is speaking again today with the economic leaders of the islands of Hatfield and McCoy.

CARLOS MEDINE: Once again, I want to welcome you all to this meeting. There are some important developments that you need to know about.

I know you're presently in the process of negotiating trade agreements for the first time with Abbydale and Springfield. But I'm sorry to have to tell you that their strained relationship has led to yet another outbreak of their bitter war. That means that, for your own peace and safety, neither of you will be able to negotiate any trade agreements with either of them.

But there is hope. The premiers of each of your islands—Hatfield and McCoy—have contacted me to express interest in developing a trade agreement between your two islands. And this seems like a good idea to us at the Trilateral Trade Consortium.

There are, of course, a few obstacles. For instance, the premier of McCoy is concerned about negotiating trade with what he thinks are the shifty and dishonest people of Hatfield. And the premier of Hatfield is reluctant to trade with McCoyians because he thinks they are sneaky and untrustworthy. We need to try to overcome these attitudes.

Both of your premiers believe that trade will be good for both production and efficiency. If you can negotiate a good trade agreement, in spite of the fact that you don't trust one another, it would benefit both islands.

So now I want you to negotiate a trade agreement that will yield the best possible terms for both. Determine what will be produced by one of you and what your neighboring island will produce. Don't be concerned about how MUCH will be produced. We'll have our economists at the Trilateral Trade Consortium work that out once you've completed the negotiations.

All of you here are the economic leaders of both Hatfield and McCoy islands. You are responsible adults and know what's best for your island. And today you'll have the unique opportunity to negotiate a fair and honest trade agreement that will benefit both of you.

You'll have 15 minutes to develop this agreement. Please sit at the table my assistant assigns you at that meeting and

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be prepared to negotiate on behalf of your island.

And, most important, please try to overcome your distrust in order to develop this agreement. But, at the same time, be very cautious about what you agree to on behalf of your people.

Our thanks to all of you.

TRADE AGREEMENT

TABLE 6.9: Who Will Produce Each Good?

Industry	Hatfield	McCoy
Fruits and Vegetables		
Clothing Design		
Chemists		
Farm Equipment		
Advertising		
Science Technology		
Communication Technology		
Energy		
Shipping		
Construction		
College Education		
Films		
Meat and Poultry		
Recording Artists		
Printer		

This trade agreement designates which island will produce each good. Production levels will be established once agreement has been reached. By signing this agreement, you indicate consensus about which island will undertake production of the good.

Economic Leaders—Hatfield

Economic Leaders—McCoy

Transcript of Video Infomercial by Ellis McClure

Hi, I'm Ellis McClure. You probably remember me from my best-selling books, *A Farewell to Work* and *All Quiet on the Trading Floor*.

I'm here to talk with you today about trade between our neighboring islands and what it will do to all of us. I'm speaking on behalf of the employed workers of your islands. They've asked me to give you the real facts behind all this talk about opening up trade between the islands.

The most important thing you need to know about trade is that it's not about "opportunity cost" or any of those other buzzwords you might hear people using. It's really all about jobs. Just remember this—if we make trade agreements with other nations, our own employed workers will become *unemployed* workers. That's a fact, and it's that simple.

If we start trading, our people—our fathers, mothers, sisters and brothers, our kids—will lose their jobs. Should one island's chemists, clothing designers, and farmers become unemployed so the other island's workers can produce what they produced? NO! You can't let it happen.

You'll hear economists argue that in the long run there won't be unemployment, even if we do trade. Well, as another economist once said, in the long run we're all dead. Right *now*, in the short run, we'll lose our jobs. These ivory-

tower economists will tell you that workers in, say, communication technology will simply change occupations as employment opportunities grow in other industries when trade takes effect.

That's just not true. It just doesn't work that way. A communications technician is not a scientist, a construction worker, or a college professor. People aren't machines. They can't just be rebuilt quickly for a new purpose. Think about what *you* would do if *you* suddenly had to switch jobs. And can we really enjoy the more plentiful goods that are promised by trade advocates, if we know our fellow citizens are out of work and suffering? No!

You know what will happen if we begin trade? Whoosh! Our jobs will disappear. That's what trade will do for us: lost jobs, lost income, lost opportunities. We can't let that happen. A country should do what's best for its people—its working people.

Working people are not alone in their fight against trade. You'll hear many environmentalists and politicians speak out against it too. Here's a flier that's being distributed by environmentalists that clearly lays out the facts about how trade will harm our natural resources and pollute the air we breathe, and our land, and our water. We cannot allow the pro-traders to destroy our environment and our jobs.

So, I'm here to ask you to look at the facts and judge for yourselves. Let's protect our precious environment and our jobs by restricting trade—with tariffs, quotas, and voluntary restraint agreements. If you, the people, won't do it, who will?

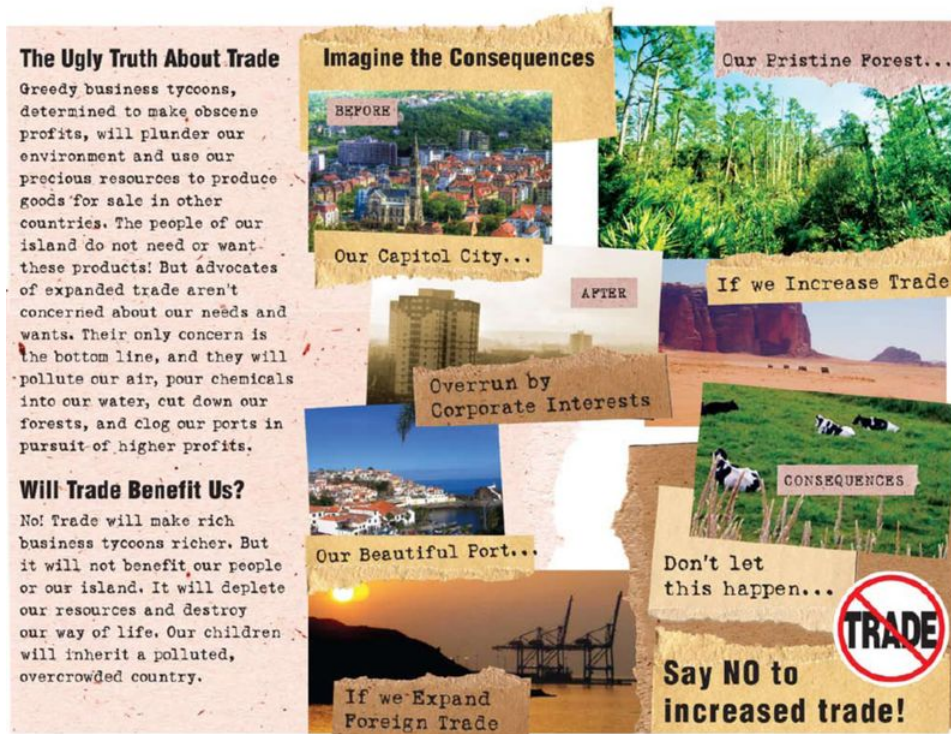
Thank you.

Flier Outside



Flier Inside

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Transcript of Third Video of Carlos Medine

VOICE-OVER NARRATOR: Carlos Medine, the President of the Trilateral Trade Consortium is speaking once again with the economic leaders of the islands of Hatfield and McCoy about what that has just occurred after a trade agreement was negotiated between the two islands.

CARLOS MEDINE: I have some very disturbing news to report to you. Mass protest has erupted over the trade agreement you negotiated with each other. Union members, environmental groups and agitators of all types have taken to the streets in opposition to your recent trade plan. Their primary concerns include the loss of jobs in unprotected industries and possible environmental destruction.

It is imperative that you prepare a flier addressing the concerns of these groups. Your flier will be distributed to the members of these groups in a public relations campaign to smooth over the recent tensions.

Your flier must explain the solid economic theories that guided your negotiations and must take into consideration each group's concerns. Remember: the members of these groups do not possess the vast economic knowledge that you do. Explain the economic theories in terms that the common citizen can understand.

Also remember that these groups know all about political propaganda and will ignore fancy slogans and slick graphics. Using economic theory, you must show them the real benefits your island will gain from trade; otherwise, your agreement will be judged a failure by many important people.

Your trade negotiations at this time have become binding treaties. You cannot change them. Your fliers must explain how the "greater good" has been served.

Once again I thank you and trust that what you develop will bring about a clear understanding of the economic facts of your trade agreement and that this will help calm the unexpected and disturbing unrest that we are now witnessing. All our hopes lie with you!

Teacher Materials

Economics Review

What is Trade?

Trade occurs because nations can specialize and produce the goods they make at lower costs and trade for those goods they produce at a relatively higher cost. Total output increases over what would occur if items were produced only within one country. Nations can increase output by specializing in goods and services they produce with greatest relative efficiency and trading for goods they cannot produce as efficiently. *Trade is not undertaken as a competition to see who can connive another nation (or person) out of its resources.* With trade current resources are used more productively and output is increased for at least two reasons.

The distribution of economic resources—land, labor, capital, and entrepreneurship—is uneven between countries. For example, some nations have better access to land resources while other nations have better access to human capital (labor). By increasing the supply of a resource through trade (i.e. having the country with relatively better access to a particular resource produce the goods), goods relying on one particular input for production can be made at a lower cost.

Efficient production of different goods may require different technologies. Technology is simply a way of combining resources. For example, clothing can be designed using many laborers (fashion designers and stitchers) or using relatively little labor and much capital (computer-designed and machine-produced). These are different technologies. Some goods are produced with relatively labor-intensive technologies (e.g. education, health) while others routinely rely on relatively capital-intensive technologies (e.g. airline transport). Nations hold an advantage in using certain technologies and, as a result, producing goods that use these technologies can lower costs.

The relevance of these points can be seen in the production schedules of Hatfield and McCoy (*Hours Needed to Produce Each Good, Teacher Table I*). The following table, which shows the island with the lowest opportunity costs for each good, suggests that McCoy has a larger, bettereducated labor force than does Hatfield while Hatfield has better land resources. As a result, McCoy can produce goods that rely heavily on educated labor at a relatively lower cost while Hatfield can produce goods that rely heavily on land resources at a relatively lower cost.

TABLE 6.10: Production with Specialization by Lowest Opportunity Cost of Production

Hatfield	McCoy	Same Cost
Fruits & Vegetables	Science Technology	Farm Equipment
Advertising	Communications Technology	Recording Artists
Meat & Poultry	College Education	Printing
Energy	Chemists	
Construction	Films	
	Clothing Design	
	Shipping	

Note that opportunity costs in farm equipment, recording artists, and printing, are the same on both islands. As a result, no gain from trade exists in these areas.

It is important to emphasize that economic efficiencies from different production costs can and do change over time. These changes can alter the relative efficiency with which goods can be produced. For example, Hatfield can invest heavily in its labor force and have more educated citizens than does McCoy while McCoy could discover untapped land resources.

Specialization and Production: Computations of the Relative Costs

To understand why McCoy should specialize and produce some goods and why Hatfield should specialize and produce other goods, we need to understand how differences in costs of production can lead to comparative advantages

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in production. We can illustrate this principle with an example that is not linked to this problem.

Suppose a dentist's office needs two kinds of services: working on teeth and typing correspondence. The dentist can earn \$50 an hour seeing patients and can hire an assistant for \$15 an hour. The dentist can service 4 patients in an hour and type 80 words a minute. The assistant can service 0 patients and type only 40 words a minute. In this case the dentist has an *absolute advantage* at both servicing patients and typing. That is, the dentist is more productive in both endeavors.

However, this does not mean the dentist should type. To type would require the dentist to take time from servicing patients, at an opportunity cost of \$50 an hour (the amount earned from being a dentist). If the dentist took an hour off from servicing patients to type 4,800 words (80 words a minute times 60 minutes) he would lose \$50 . He only has to pay the assistant \$30 to type those 4,800 words since it would take the assistant 120 minutes —2 hours—to complete this task (4,800 words divided by 40 words is 120 minutes). Since the assistant is paid \$15 an hour and it requires 2 hours of typing, the dentist is better off paying the assistant \$30 (15 times 2) and earning the \$50 servicing patients. The dentist has a comparative advantage in servicing patients while the assistant has a comparative advantage at typing. This is because the dentist has a higher opportunity cost of typing (i.e. servicing patients) than does the assistant. As a result, the dentist should specialize in servicing patients and the assistant should specialize in typing.

Let's look at how this specialization can be applied to two countries, Northland and Southland. Each country has different costs of producing wheat and radios. All wheat and radios are alike and interchangeable. The productivity of workers in each country is shown in the table below:

TABLE 6.11: Cost of Production

Country	Wheat	Radios
Northland	10 units per day	4 per day
Southland	5 units per day	3 per day

TABLE 6.12: Opportunity Costs of Production

Product Location	Opportunity Cost (W is wheat and R is radio)	Opportunity Cost per Unit
Wheat in Northland	$10W = 4R$	$2/5$ radio (.4R)
Wheat in Southland	$5W = 3R$	$3/5$ radio (.6R)
Radios in Northland	$4R = 10W$	$5/2$ wheat (2.5W)
Radios in Southland	$3R = 5W$	$5/3$ wheat (1.67W)

Lower opportunity cost per unit of wheat implies a comparative advantage in Northland.

Lower opportunity cost per unit of radios implies a comparative advantage in Southland.

R = Radios W = Wheat

Note that Northland's workers are more productive at both manufacturing radios and harvesting wheat. Northland has an *absolute advantage* in both wheat and radios. However, because a worker cannot do two things at one time, countries must allocate labor away from one good to produce the other good. To maximize its gains from trade, each country must choose to produce according to its *comparative advantage*.

The key to computing comparative advantage is to measure the opportunity costs of production for each country (see above Table, *Opportunity Costs of Production*). In the case of Northland and Southland, the choices are simple. To produce wheat, a country must forego production of radios, and vice versa. The opportunity cost of wheat is radios foregone and the opportunity cost of radios is wheat foregone.

In our two-country example, we can use simple algebra to compute the opportunity cost of wheat and radios within each country. Once we compute the opportunity cost of production within each country, we can compare the oppor-

tunity costs between countries to establish each country's comparative advantage.

Of course, in the real world, where goods are produced with a wide variety of resources, computing comparative advantage is difficult. Fortunately, prices established in a free market automatically generate specialization according to comparative advantage. This is because market prices of resources reflect the value of those resources in alternative uses—their opportunity cost. Competition ensures that the prices of goods within a country equal the sum of the opportunity costs of the resources used in their production. In the above example, wheat will be relatively more expensive in Southland than Northland because more radios must be foregone in their production (i.e. the opportunity cost is .4 Radios in Northland and .6 Radios in Southland). Radios will be relatively more expensive in Northland than Southland because more wheat must be foregone in production (i.e. the opportunity cost is 2.5 Wheat in Northland and 1.67 Wheat in Southland). If each specializes and produces only one good, wheat will be produced in Northland and radios will be produced in Southland.

Please note: The numeric example in **The Greater Good** uses hours of labor as the basis for establishing costs of production. The example above uses goods. Dollars are often the unit used to quantify production costs. Using goods or hours as units of measure of opportunity costs is often easier for students to understand. Using dollars, however, has the advantage of enabling students to quickly compute prices and terms of trade. If this is a desired curriculum goal, simply replace the word “hours” with the word “dollars” throughout the unit.

Terms of Trade

This unit illustrates that it pays to trade based on one's comparative advantage. We can illustrate the gains from trade using the example of wheat and radio production in Northland and Southland to establish the *terms of trade*. The “terms of trade” is the rate at which goods are exchanged between countries. In the previous example, the incentives created by the different opportunity costs of production within Northland and Southland will create favorable terms of trade for both countries.

One country's offer of trade and another country's acceptance (i.e. negotiation) determine terms of trade. Willingness to accept an offer occurs because its terms permit a country to increase consumption of one good without giving up consumption of another good. The opportunity costs suggest that the relative prices of wheat and radios in Northland are such that a radio costs the equivalent of 2.5 units of wheat. In Southland, a radio costs 1.67 units of wheat. Likewise, wheat costs $\frac{2}{5}$ a radio (or .4) in Northland and $\frac{3}{5}$ a radio (or .6) in Southland. *If each unit is a dollar*, the price of a radio would settle between \$1.67 and \$2.50 . Northland would be willing to pay any price lower than the cost of producing a radio in its country— \$2.50 —and Southland would be willing to accept any price that was higher than the cost of producing the radio in its country— \$1.67 . Likewise, the price of wheat will be somewhere between \$.40 and \$.60 .

Barriers to Trade

Economic theory argues that free trade is an ideal because of the efficiency that it affords. Total output is increased and prices are decreased. However, much of the trade that occurs between nations is managed or constrained by government policies. In our Northland and Southland example, if trade occurs, firms producing radios in Southland and wheat in Northland will close and workers in these industries will lose their jobs. Thus, even though Northland and Southland as a whole will gain from trade, specific individuals will lose and be quite upset. They will not only boycott the celebration of trade, they will also actively seek to discourage it.

The study of trade must therefore be placed along side the fact that some individuals have a vested interest in restricting trade. In particular, workers and firms in industries that compete with imported products want to restrict trade. This microeconomic resistance to trade arises because imports typically mean fewer jobs and less income in some domestic industries. At the same time, however, exports represent increased jobs and income in other industries. Producers and workers in industries that export goods gain from trade. Thus, on a microeconomic level, trade reveals identifiable gainers and losers. Trade not only alters the mix of output but also redistributes income from importing-competing industries to export industries. It is this redistribution that creates political and economic friction.

We must remember the average consumer enjoys a higher standard of living as a result of trade. Because trade

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increases efficiency and total output in trading nations, countries as a whole enjoy a greater number of goods and services. This may be of small consolation to the producer or worker who ends up without a firm or a job. Using restrictions helps the firms and the workers in these industries but sacrifices economic efficiency and output. A summary of the tradeoffs created from these restrictions follows this lesson.

Methods Used to Restrict Trade

The microeconomic losses from trade create a clamor for trade restrictions: Tariffs, Quotas and Voluntary Restraint Agreements.

Tariffs

One of the most visible restrictions on trade is a tariff, a special tax imposed on imported goods. Tariffs reduce trade by making goods from other countries more expensive for people in the country imposing the tariff. By making goods more expensive, they become less competitive with domestically produced goods. In our example of Northland and Southland, radios that sold for \$1.67 without tariffs and had a tariff imposed of \$.85 (or anything more than \$.83) would sell for more than the domestically produced radios, which sell for \$2.50 . Imported radios will not be consumed at the higher price. The domestic firm producing radios would not shut down and workers in the radio industry would not lose their jobs.

Quotas

Quotas act as a barrier to trade by restricting the quantity of a particular good that can be imported. In the United States, goods that have been subject to quotas include oil, sugar, meat, dairy products, textiles, cotton, peanuts, steel, cloth diapers, and ice cream. Approximately 12 percent of our imports are subject to import quotas. Quotas, like all trade barriers, are subject to retaliatory actions by other countries. Quotas are a much greater threat to market economies than are tariffs because quotas preclude additional imports at any price.

Voluntary Restraint Agreements

A slight variation on quotas has been used in recent years—voluntary restraint agreements. This form of barrier asks producers in foreign countries to limit their exports “voluntarily.” Voluntary Restraint Agreements have been negotiated with producers in Japan, South Korea, Taiwan, China, and the European Economic Community. Korea, for example, agreed to reduce its annual shoe exports to the United States from 44 million pairs to 33 million pairs. Taiwan reduced its shoe exports from 156 million pairs to 122 million pairs per year. All of these “voluntary restraint agreements” represent an informal type of quota. The difference between the two is that quotas are imposed rather than negotiated and that voluntary agreements often contain provisions for later increases in sales.

U.S. Trade Policies

Trade policy is a continuing conflict between the economic benefits from trade associated with comparative advantage and protectionism against competition from abroad. Free trade promises more output, greater efficiency, and lower prices. At the same time, free trade threatens profits, jobs, and wealth in specific industries, which are “protected” with tariffs, quotas and voluntary restraint agreements.

The ability to execute policy is explicitly granted to Congress. The Constitution grants Congress the power “to regulate commerce with foreign nations” and to “lay and collect. . . duties.” Presidential authority over trade policy is dependent on Congress and, for about 150 years, Congress decided each tariff, item by item.

Perhaps the culmination of Congressional authority over trade with foreign nations was the Smoot-Hawley Tariff Act of 1930, which set tariffs for more than 20,000 manufactured and agricultural items. In a classic move of protectionism, Smoot-Hawley increased tariffs for most items, and was passed despite the protests of 35 countries and thousands of economists. The policy of high tariffs created retaliation and restrictions on American trade by other countries and heightened the Depression by restricting markets for U.S. goods and services. At the time of its passage, the U.S. was a creditor nation that exported more goods than it imported.

The Reciprocal Trade Agreements Act (RTAA) of 1934 was a direct result of Smoot-Hawley. This act delegated to the president extensive authority to cut tariffs on his own by as much as 50 percent , if he could negotiate reciprocal agreements with other countries. By incorporating most-favored nation clauses in reciprocal agreements, the tariff

reduction applies not only to the specific nation negotiating with the U.S. but also are generalized to all “most-favored nations.” Note: a country receiving most-favored nation status is not favored over others in trading. Rather, countries with such status receive the same “most-favored” tariff treatment. Without most-favored nation status, a country’s exports to the U.S. are much less competitive.

The RTAA laid the basis for a fundamental shift away from protectionism and toward free trade. This shift was manifested after World War II by the General Agreement on Tariffs and Trade (GATT) and, more recently, by the North American Free Trade Agreement. Both of these efforts produced considerable debates on free trade but resulted in congressional approval (NAFTA in 1992 and the latest round of GATT in 1994).

GATT

In 1947, the General Agreement on Tariffs and Trade (GATT) was signed by 12 of the world’s largest trading nations. The GATT pact committed these nations to pursue free-trade policies and to extend equal access (“most favored nation” status) to domestic markets for all GATT members. GATT is based on three cardinal principles. First, equal, nondiscriminatory treatment exists between all member nations. Second, reduction of tariffs is by multilateral negotiation, a shift from the RTAA that gave rise to only bilateral trade negotiations (i.e. between two nations). Third, import quotas are eliminated.

The GATT goal of lowering trade barriers is achieved through periodic “rounds” of multinational trade agreements. The latest round (the eighth) began in Uruguay in November 1986 (the “Uruguay” round). Each round entails extended negotiations about how to reduce trade barriers. While earlier rounds focused on manufactured goods, the Uruguay Round extended trade agreements to farm products and “intellectual property” (e.g. copyrighted books, music, and computer software). After nearly eight years of negotiations, 117 nations initiated a final agreement on April 15, 1994. Included in this agreement was a further reduction in import tariffs, an expansion of the scope of free-trade rules to agriculture and services, and the creation of a new organization, the World Trade Organization, to police and enforce trade rules.

When GATT was first signed in 1947, tariff rates in developed countries averaged around 40 percent . The first seven GATT rounds pushed tariffs down to an average of 6.3 percent and the Uruguay round lowered them to 3.9 percent .

NAFTA

The North American Free Trade Agreement (NAFTA) set the stage for economic integration among the United States, Canada, and Mexico by reducing trade barriers. The ultimate goal of NAFTA was to eliminate all trade barriers among these three countries. At the time of signing (December 1992), tariffs among the three countries averaged eleven percent in Mexico, five percent in Canada, and four percent in the United States. NAFTA requires that all tariffs between the three countries be eliminated within 15 years and requires the elimination of specific non-tariff barriers.

TABLE 6.13: Arguments For and Against Restrictions to Trade

For RESTRICTIONS

Domestic Employment

Restricting imports of foreign-produced goods increases spending on domestically produced goods. This boosts the domestic level of income, production and employment.

Foreign Labor

Domestic firms and workers must be shielded from the need to compete with countries where wages are low. Otherwise, cheap imports will flood domestic markets, prices of domestic goods will fall, and the domestic wages of workers will be pulled down. This will reduce the level of living for our nation’s workers.

AGAINST RESTRICTIONS

While imports may eliminate some domestic jobs, they also create others. Domestic trade barriers may invite retaliation from trading partners, reduce jobs in export industries, and make most individuals worse off.

When countries trade, they both benefit, even if one partner is “rich” and another is “poor”. Domestic consumers gain from being able to buy goods they want at lower prices. The domestic level of living rises when more, lower-priced goods are available. Because wages are based on worker productivity, domestic wages may be higher because the workers are more productive with better technology and business infrastructure.

TABLE 6.13: (continued)

For RESTRICTIONS

Infant Industries

Protection is needed to allow new domestic industries to establish themselves. Young domestic industries need to be shielded from the competition of more mature and efficient foreign firms so they have a chance to develop, become efficient, and compete.

Military Self-Sufficiency

Protection is needed to preserve or strengthen industries that produce goods and materials essential for defense or war. Given the economic and political uncertainty in the world, maintaining self-sufficiency in strategic goods and materials is more important than other goals (like efficiency).

Environment

We should be prohibited from trading with poor countries that have lax environmental laws. Trade only reinforces production that pollutes the air and water and destroys our natural resources. The environment is too fragile to withstand this abuse.

AGAINST RESTRICTIONS

Rather than imposing trade barriers, government subsidies could be used as more effective ways to stimulate production in select industries. The danger of barriers is that they will persist after the industry matures.

The self-sufficiency argument is open to serious abuse. Most industries could claim they contribute to national security and ask to have barriers imposed to protect them. Steel, gas, food, shelter, radios (and other communication) and virtually all goods we use on a daily basis could be viewed as essential.

Do we have the right to deny food to individuals in a poor country because we won't trade with them? Ultimately, trade increases the level of living for all and, once a country becomes richer, it often becomes more environmentally aware.

Demonstrating Gains from Trade:**Computations in the Student Tables**

The computations in this problem show students how producing goods with lower opportunity costs and trading for goods with relatively higher production costs can increase a country's total production. This is explicitly done in two stages. In the first stage, students are given the *Hours Needed to Produce Each Good* table, which tells them how many hours their island and their trading partners use to produce each good. Although the students are only given hours for their island and for Springfield and Abbydale, **Teacher Table 1** shows the hours needed to produce each good on all four islands. Remember: students who represent Hatfield should not know the costs of production on McCoy and those who represent McCoy should not know the costs of production on Hatfield.

Students use the information in Table 1 to compute the *Opportunity Cost of Production* (for answers see **Teacher Table 2**) in each island. These computations tell the students how much they must give up in order to produce each good. Students should be coached to see the differences between absolute production and opportunity costs. The absolute cost—**Teacher Table 1**—is the hours it takes to produce a good. The relative (opportunity) cost—**Teacher Table 2**—is how much production of one good must be given up to produce another good.

The good that requires the fewest hours to produce is the item that we use to measure opportunity costs. The lowest-cost good represents the maximum production that must be given up to make any other good. For Hatfield, construction is the lowest-cost good because it requires only two hours to produce. For McCoy, science technology is the lowest-cost good at three hours. For Springfield, printing is the lowest-cost good at 2.5 hours. For Abbydale, shipping is the lowest-cost good at six hours. Although we report the cost of production in hours, the unit of measure could be anything. Some teachers like to use quantities, some like to use dollars. The unit of measure is not important. It is the concept of opportunity cost that is important.

The *opportunity* cost of production on each island determines which island should produce each good. Comparing opportunity costs between either McCoy or Hatfield and Springfield and Abbydale shows that the lowest opportunity cost of producing each good differs among the islands. For example, as **Teacher Table 2** shows, the opportunity cost of producing fruits and vegetables is four for Hatfield, eight for McCoy, eight for Springfield, and 4.5 for Abbydale. For the students who represent the island of Hatfield, and trade with Springfield and Abbydale, Hatfield will be the

low-cost producer of fruit and vegetables because it must give up only four hours of producing something else. For the students who represent the island of McCoy, and trade with Springfield and Abbydale, Abbydale will be the low-cost producer of fruit and vegetables because it must give up only 4.5 hours in production. **Teacher Table 2** designates the low-cost producer with an asterisk (*) for the countries of Hatfield, Springfield, and Abbydale and in bold for the countries of McCoy, Springfield, and Abbydale. Students are asked to circle the low-cost producer of each good.

Students can clearly see how specialization reduces costs with the *Why Trade is Good* table (for answers see **Teacher Table 3**). This table shows how many hours are needed to produce each good once islands have specialized production in the low-cost goods. The total cost to produce these goods is simply the summation of the hours used in production. The total cost of production is 170 for Hatfield, 178.5 for McCoy, 211.5 for Springfield, and 443 for Abbydale (**Teacher Table 1**). By computing hours used for the low-cost producer (i.e. with trade), students see the cost of production is less than the total hours used for all countries with trade (168.5 for countries trading with Hatfield and 156.5 for countries trading with McCoy).

In the final stage of the problem, students are asked to negotiate trade when the hours needed to produce each good by the trading partner are not known. Although they know the hours used on their island, they can only speculate about the other island's hours. *Students should offer to trade goods that are lowest-cost to produce in exchange for goods that take the greatest hours to produce. This should lead to trade.* **Teacher's Sample Trade Agreement** uses an X to designate the island that will produce the good if trade is grounded in cost considerations. However, as **Teacher's Sample Trade Agreement** shows, there are some goods (farm equipment, recording artists, and printers) that have the same opportunity cost of production in both Hatfield and McCoy. While students should agree on who produces goods where opportunity costs differ, there will be no consensus on trading for the goods with equal opportunity costs. Once the problem has ended and the hours of production for both Hatfield and McCoy are revealed, students should realize gains from trade would not occur for goods that have equal opportunity costs of production.

TABLE 6.14: Hours Needed to Produce Each Good

Industry	Quantity Produced on Each Island	Hours Needed to Produce Each Quantity Hatfield	Hours Needed to Produce Each Quantity McCoy	Hours Needed to Produce Each Quantity Springfield	Hours Needed to Produce Each Quantity Abbydale
Fruits and Vegetables	50 pounds	8	24	20	27
Clothing Design	25 garments	23	12	5	24
Chemists	50 prescriptions	17	8	22.5	20
Farm Equipment	30 machines	12	18	20	21
Advertising	5 slogans	10	18	12	30
Science Technology	10 innovations	19	3	25	66
Communication Technology	300 phone calls	21	10	27	28
Energy	1 million kilowatts	6	12	15	20
Shipping	20 tons	4	4	5	6
Construction	50 buildings	2	6	7.5	27
College Education	30 courses	15	9	23	48
Films	15 scenes produced	14	20	8	45
Meat and Poultry	50 pounds	6	15	9	36

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TABLE 6.14: (continued)

Industry	Quantity Produced on Each Island	Hours Needed to Produce Each Quantity	Hours Needed to Produce Each Quantity	Hours Needed to Produce Each Quantity	Hours Needed to Produce Each Quantity
Recording Artists	30 tapings	10	15	10	27
Printers	100 copies	3	4.5	2.5	18
Total Hours Needed for Production		170	178.5	211.5	443

Have students sum the total hours needed for production on each island to show them how many resources must be used by each island to produce the designated goods.

Remember to distinguish between absolute and comparative advantage when examining Table 1. It is clear from Table 1 that Hatfield and McCoy have an *Absolute Advantage* over Abbydale in producing each good. That is, the hours used to produce each good is lower in Hatfield and McCoy than Abbydale. For some goods, Hatfield and McCoy have an absolute advantage over Springfield.

However, examining absolute advantage does not tell what production must be given up for each good—the opportunity cost of producing. By comparing the opportunity costs of producing goods across countries, we can determine the country with the comparative advantage in production—the one that has to give up the least to produce the good (i.e. lowest opportunity cost).

Absolute Advantage tells us which country uses the least amount of resources to produce a good. This is shown, in Table 1, by the spending the fewest hours producing a particular good. The lowcost producer has the absolute advantage in production.

Comparative Advantage tells us which country gives up less production to make the good. One way to compute this is to identify the “cheapest” good to produce and see how much of that good you must give up to produce other goods. The “cheapest” good is the one that uses the fewest resources (i.e. costs less). Because laborers (and other resources) can be used to produce a single good, producing other goods means you are not producing something else. By comparing these opportunity costs across countries (Table 2), we can determine which country has the comparative advantage—the lowest opportunity cost of producing the good.

An asterisk (*) designates the low-cost producer among Hatfield, Springfield, and Abbydale. **Blue** designates the low-cost producer among McCoy, Springfield, and Abbydale.

TABLE 6.15: Opportunity Costs of Production/Comparative Advantage: How Long it Takes Each Island to Produce Each Good as Compared to its Lowest-Cost Good

Industry	Quantity Produced on Each Island	Opportunity Costs Each Island Hatfield	Opportunity Costs Within Each Island McCoy	Opportunity Costs Each Island Springfield	Opportunity Costs Within Each Island Abbydale
Fruits and Vegetables	50 pounds	4.0*	8.0	8.0	4.5
Clothing Design	25 garments	11.5	4.0	2.0*	4.0
Chemists	50 prescriptions	8.5	2.7	9.0	3.3*
Farm Equipment	30 machines	6.0	6.0	8.0	3.5*
Advertising	5 slogans	5.0	6.0	4.8*	5.0
Science Technology	10 innovations	9.5*	1.0	10.0	11.0

TABLE 6.15: (continued)

Industry	Quantity Produced on Each Island	Pro-duced on Each Island	Opportunity Costs Within Each Island	Opportunity Costs Within Each Island	Opportunity Costs Within Each Island	Opportunity Costs Within Each Island
Communication Technology	300 phone calls		10.5	3.3	10.8	4.7*
Energy	1 million kilowatts		3.0*	4.0	6.0	3.3
Shipping	20 tons		2.0	1.3	2.0	1.0*
Construction	50 buildings		1.0*	2.0	3.0	4.5
College Education	30 courses		7.5*	3.0	9.2	8.0
Films	15 scenes produced		7.0	6.7	3.2*	7.5
Meat and Poultry	50 pounds		3.0*	5.0	3.6	6.0
Recording Artists	30 tapings		5.0	5.0	4.0*	4.5
Printers	100 copies		1.5	1.5	1.0*	3.0

The key to understanding this table is to remember that hours spent producing goods are “costs of production.” Knowing this, we can show each island’s opportunity cost of producing each good by dividing the hours used to produce each good by the hours it takes to produce the good with the lowest cost. The low-cost good can be used as the basis for measuring opportunity costs because it tells us the maximum amount production we must give up in order to produce other goods.

For example, in Hatfield, construction is the lowest cost good since it takes only two hours to produce. That means that construction can be used to measure the cost of producing other goods. It costs two times as much to produce meat and poultry ($4/2$) as it does construction in Hatfield. In McCoy, science technology is the lowest cost good since it takes only three hours to produce. It costs 2.7 times as much for chemists’ products ($8/3$) as it does science technology in McCoy. In Abbydale, the lowest cost good to produce is shipping. It takes six hours to ship. Shipping is now the benchmark measure of cost. Meat and poultry cost six times as much as shipping ($36/6$).

When they finish entering all the numbers, students should **circle lowest number in each row, to indicate the island that has the comparative advantage**—the lowest opportunity cost of producing the good. If the countries produce only those goods in which they have a comparative advantage (i.e., specialize) and trade for goods in which other countries hold a comparative advantage, the *total cost* of producing all goods will *decrease* (Teacher Table 3).”

TABLE 6.16: Why Trade is Good: Reduction in Hours with Specialization and Trade

Industry	Quantity Produced on Each Island	Hours if the Island with the Lowest Opportunity Cost Produces the Good and Trades With: Hatfield	Hours if the Island with the Lowest Opportunity Cost Produces the Good and Trades With: McCoy
Fruits and Vegetables	50 pounds	8	27
Clothing Design	25 garments	5	5
Chemists	50 prescriptions	20	8
Farm Equipment	30 machines	21	21
Advertising	5 slogans	12	12
Science Technology	10 innovations	19	3
Communication Technology	300 phone calls	28	10

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TABLE 6.16: (continued)

Industry	Quantity Produced on Each Island	Hours if the Island with the Lowest Opportunity Cost Produces the Good and Trades With:	Hours if the Island with the Lowest Opportunity Cost Produces the Good and Trades With:
Energy	1 million kilowatts	6	20
Shipping	20 tons	6	6
Construction	50 buildings	2	6
College Education	30 courses	15	9
Films	15 scenes produced	8	8
Meat and Poultry	50 pounds	6.9	9
Recording Artists	30 tapings	10	10
Printers	100 copies	2.5	2.5
Total Hours Needed for Production		168.5	156.5

“Total Hours Needed for Production” can be computed using a two-stage process. First, identify the hours needed to produce each good (Table 1) if the island with the lowest opportunity cost of production (Table 3) produced the good. Second, sum the hours needed to produce all goods if each island specialized production and traded for goods that it did not produce.

The total hours needed for production with specialization and trade will be less than the total hours that each island would use if it produced all of the goods (Table 1).

TEACHER’S SAMPLE:**TABLE 6.17: Trade Agreement—Who Will Produce Each Good?**

Industry	Hatfield	McCoy
Fruits and Vegetables	X	
Clothing Design		X
Chemists		X
Farm Equipment	?	?
Advertising	X	
Science Technology		X
Communication Technology		X
Energy	X	
Shipping		X
Construction	X	
College Education		X
Films		X
Meat and Poultry	X	
Recording Artists	?	?
Printers	?	?

Ice Breaker to Begin Trade: Have students begin trade by offering to trade the low-cost goods for high-cost goods.

Students should complete the table by marking an X next to the goods that each island will produce. In the table above, the island with a comparative advantage has an X and goods with equal opportunity costs have a “?”.

During the debriefing, students should be told which goods each island would produce if the hours spent in production in both countries were known. With perfect information, countries would produce the goods with the lowest opportunity cost.

Economic Leaders—Hatfield

Economic Leaders—McCoy

Concept Definitions

The curriculum was designed to teach the following concepts:

Absolute Advantage The comparison among producers according to their productivity or cost of producing a good or service. The producer with the lowest cost of production holds the absolute advantage.

Comparative Advantage Having a lower relative (comparative) cost than another producer. A **comparative cost** is the amount of production of one product that must be reduced to increase the production of another (*opportunity cost*). This can be determined by comparing the *opportunity cost* of production between producers. The producer with the lowest *opportunity cost* of production holds the comparative advantage.

Costs The measure of what has to be given up in order to produce something. Total costs include both **opportunity costs**, the cost of alternative uses of resources, and **direct costs**, or total money outlays.

Export and Import A good that is produced by one country but sold in another country. The good is an **import** in the country in which it is sold and an **export** in the country in which it is produced.

Free Trade The absence of artificial (e.g. government imposed) barriers to trade among individuals and firms.

Market Economy An economic system (method of organization) in which only the private decisions of consumers, *resource* suppliers, and producers determine how resources are allocated.

Opportunity Costs The real sacrifice involved in achieving something. The value of the alternative that would have to be foregone in order to achieve a particular thing.

Protectionism A policy (e.g. *tariff* or *quota*) that is designed to protect domestic producers of a good from the competition of foreign producers.

Quota A limit imposed on the quantity of a good that can be brought into a nation from a foreign nation.

Resources (Factors of Production) Land, labor, capital, and entrepreneurial ability that are used to produce things to satisfy human wants.

Scarcity A condition where less of something exists than people would like if the good had no *cost*. Scarcity arises because *resources* are limited and cannot accommodate all of our unlimited wants.

Specialization The use of *resources* to produce one or a few goods and services. This is in contrast to the use of *resources* to produce many different goods and services.

Tariff A *tax* imposed on a good that is from a foreign country. In the United States only the federal government can impose tariffs.

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Tradeoff An exchange relationship denoting how much of one good (or *resource*) is needed to get another good (or *resource*).

Voluntary Exchange To give (or transfer) one thing for something else in return. The exchange process is undertaken in accordance with one’s own free choice.

Voluntary Restraint Agreement (also known as a voluntary export restraint) Exporting countries agree to voluntarily limit their exports to the target country.

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5, “Meets Standards” equals a 3, and “Does Not Meet Standards” equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

TABLE 6.18: The Greater Good: Rubric for Written Flyer on Trade Agreement

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding of the Problem (10%) Key Aspects: <ul style="list-style-type: none"> The need to defend their trade agreement by responding to labor and environmental concerns The need to explain economics so “common citizens” understand, and to avoid “slick” graphics and propaganda techniques 	Solution to the problem addresses all key aspects clearly, accurately and completely Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics	Solution to the problem addresses all key aspects clearly and accurately Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts “made up” to avoid grappling with key aspects of economics	Solution to the problem does not address most or all key aspects, or does so unclearly or inaccurately Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts “made up” to avoid grappling with key aspects of economics

TABLE 6.18: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding of Economics (70%) Key Points: <ul style="list-style-type: none"> • How free trade benefits “the greater good” in each country • The role of the concepts of specialization, comparative advantage, opportunity cost, and absolute advantage 	All key points are discussed clearly, accurately and completely using economic thinking, theory and vocabulary Concerns about job loss and environmental harm are addressed thoroughly and persuasively, with clear and detailed economic arguments	Most key points are discussed clearly and accurately, using economic thinking, theory and vocabulary Concerns about job loss and environmental harm are for the most part addressed, with clear economic arguments	Most or all key points are omitted and/or are not discussed clearly and accurately using economic thinking, theory and vocabulary Concerns about job loss and environmental harm are not addressed, and/or economic arguments are not clearly explained; emotional or non-economic arguments may be used instead
Quality of Writing and Design (20%)	Explanations of economic theories are written in a clear, easily-understood style that does not use “fancy slogans.” Writing is free of mechanical and grammatical errors Its appearance is professional in the use of layout, color, graphic elements, headings, and text; it is easy to see and understand	Explanations of economic theories are for the most part written in a clear, easily-understood style that does not use “fancy slogans.” Writing is free of significant mechanical and grammatical errors Its appearance shows attention to the use of layout, color, graphic elements, headings, and text; it is easy to see and understand	Explanations of economic theories are not written in a clear, easily-understood style; it may include “fancy slogans.” Writing has significant mechanical and grammatical errors Its appearance is not clear in the use of layout, color, graphic elements, headings, and text; it is not neat and/or easy to see and understand

Test for *The Greater Good*

Name _____

PLEASE BUBBLE IN YOUR ANSWERS COMPLETELY—LIKE THIS "Bold"

- In four hours, the Island of Hatfield can produce 100 buildings or 50 tons of shipping. This relationship describes:
 - an absolute advantage
 - a comparative advantage
 - a tradeoff
 - a scarce good
- If North Korea has virtually no free trade partners:
 - their trade partners are subject to quotas and tariffs
 - other countries can import and export goods from the North Korea without government regulation
 - North Korean trade agreements are ineffective
 - North Korea is able to produce at its most efficient levels

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3. A store can sell either cookies for \$2 apiece or cakes for \$10 a piece. If it chooses to sell cookies, what are the cakes?
 - a. less profitable
 - b. tradeoff
 - c. the opportunity cost
 - d. more profitable
4. If the Island of McCoy wants to specialize in producing certain goods, it:
 - a. must have a domestic demand for the goods
 - b. will probably need to import other goods
 - c. should follow a protectionist policy
 - d. will eventually use all its resources
5. In free trade:
 - a. tariffs are allowed
 - b. quotas are allowed
 - c. protectionism is allowed
 - d. no tariffs or quotas are allowed
6. A country faces scarcity if:
 - a. trade barriers create economic efficiencies
 - b. taxpayers refuse to pay more taxes
 - c. it has a limited amount of land
 - d. the government runs at a deficit
7. A government has to decide if it should spend money on schools or a missile defense system. To do this with economic efficiency it must examine its:
 - a. absolute advantage in production
 - b. quota system
 - c. national security concerns
 - d. opportunity costs of production
8. The U.S. produces more technical goods for export than other countries because:
 - a. it has resources better used for technical goods
 - b. it knows how to set quotas
 - c. of national security concerns
 - d. of trade barriers
9. One economic tradeoff the Island of Hatfield has to face is whether to:
 - a. produce energy or food
 - b. impose trade barriers or free trade
 - c. trade with the Island of McCoy or not trade with them
 - d. all of the above
10. The Island of Hatfield produces wagons in half the time as the Island of McCoy. This means:
 - a. No matter what, the Island of Hatfield should specialize in wagon production.
 - b. The Island of Hatfield has a quota system.
 - c. The Island of Hatfield has an absolute advantage in energy production.
 - d. Not enough information is provided
11. The Island of Hatfield can't produce unlimited technology because of:
 - a. absolute advantage
 - b. scarcity
 - c. free trade

- d. protectionism
12. If the Island of Hatfield wishes to open free trade with the Island of McCoy, it:
 - a. must eliminate all trade barriers
 - b. must implement quotas first
 - c. can only import and export certain goods
 - d. must sign a non-aggression pact
 13. When considering free trade, what contributes to a country's comparative advantage?
 - a. production costs
 - b. the other country's production costs
 - c. trade barriers
 - d. both a and b
 14. It takes the Island of Hatfield 19 hours to process coconuts and the Island of McCoy 3 hours to process coconuts. Who has the absolute advantage?
 - a. Hatfield
 - b. McCoy
 - c. neither
 - d. not enough information is provided
 15. Which of the following is not an example of an economic tradeoff for an Hawaiian island? It can:
 - a. produce 500 pounds of coffee or 100 pounds of pineapples
 - b. impose trade barriers or have free trade
 - c. specialize its production or not
 - d. produce both coffee and pineapple
 16. The world can't produce unlimited amounts of oil. This illustrates the principle of:
 - a. scarcity
 - b. absolute advantage
 - c. comparative advantage
 - d. inadequate substitute products
 17. If you choose to take a job at Pizza Hut at \$10 an hour rather than Dominos at \$12 per hour, the job at Dominos is the:
 - a. better choice
 - b. tradeoff
 - c. opportunity cost
 - d. comparative advantage
 18. When a country uses its resources to produce only a few goods, this is called:
 - a. specialization
 - b. a quota
 - c. a tariff
 - d. protectionism
 19. Eliminating all trade barriers is an example of a:
 - a. voluntary restraint system
 - b. quota system
 - c. tariff system
 - d. free trade system
 20. If the Island of Hatfield is more efficient at producing energy and advertising than fruits and vegetables, it:
 - a. should specialize in those goods

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- b. will starve because it can't produce enough fruits and vegetables
 - c. should become more efficient in producing fruits and vegetables
 - d. both b and c
21. When no taxes exist on goods imported into or exported from a country, that country has:
- a. a comparative advantage
 - b. a free trade policy
 - c. a trade agreement
 - d. an absolute advantage
22. Absolute advantage is affected by:
- a. protectionism
 - b. quotas
 - c. resources
 - d. free trade
23. The Island of McCoy chooses to produce clothing instead of fruits. This is an example of:
- a. labor inefficiency
 - b. opportunity cost
 - c. scarcity
 - d. tradeoffs
24. When deciding to specialize production of a good, the Island of Hatfield must consider its opportunity cost. An opportunity cost is:
- a. the amount of money lost by not producing all other goods
 - b. the next best production alternative
 - c. the amount of money it costs to produce the good
 - d. the amount of money made from exporting the good
25. The World Trade Organization encourages:
- a. the least efficient countries to build trade barriers
 - b. countries to protect the rights of workers
 - c. trade among member countries
 - d. governments to use a single currency
26. Protectionism:
- a. restricts imports into a country
 - b. protects some domestic jobs
 - c. may include quotas and tariffs
 - d. all of the above
27. If a country wants to specialize in the export of certain goods, it should have:
- a. access to the necessary resources for production
 - b. a comparative advantage in production
 - c. an absolute advantage in production
 - d. both a and b
28. If the U.S. has a scarce amount of resources:
- a. workers must be protected
 - b. the U.S. should impose tariffs
 - c. there are not as many goods as people want
 - d. workers must work harder
29. Using Table 1 below, which island has a comparative advantage in producing advertising?

- a. Hatfield
- b. McCoy
- c. Springfield
- d. Abbydale

TABLE 6.19: Hours Needed to Produce Goods

Industry	Quantity	Island of Hatfield	Island of McCoy	Island of Springfield	Island of Abbydale
Farm Equipment	30 machines	12	18	20	21
Advertising	5 slogans	10	18	10	30
Science Technology	10 innovations	19	3	25	6
Energy	1 million kilowatts	6	12	15	20
Shipping	20 tons	4	4	5	6
Construction	50 buildings	2	6	7.5	27
Meat and Poultry	50 pounds	6	15	9	36
Recording Artists	30 tapings	9	15	10	27
Printers	100 copies	3	4.5	2.5	18

30. Using Table 1 above, which island has the absolute advantage in producing meat and poultry?
- a. Hatfield
 - b. McCoy
 - c. Springfield
 - d. Abbydale
31. Using Table 1 above, for what good does the Island of Hatfield have both an absolute and comparative advantage?
- a. energy
 - b. recording artist
 - c. printer
 - d. not enough information is provided
32. Using Table 1 above, which island should produce advertising?
- a. Hatfield
 - b. McCoy
 - c. Springfield
 - d. Abbydale
33. Using Table 1 above, which island should produce printing?
- a. Hatfield
 - b. McCoy
 - c. Springfield
 - d. Abbydale

Test for *The Greater Good*

(Version 2)

Teacher's Answer Key

6.1. THE GREATER GOOD

1. In four hours, the Island of Hatfield can produce 100 buildings or 50 tons of shipping. This relationship describes:
 - a. an absolute advantage
 - b. a comparative advantage
 - c. **a tradeoff**
 - d. a scarce good
2. If North Korea has virtually no free trade partners:
 - a. **their trade partners are subject to quotas and tariffs**
 - b. other countries can import and export goods from the North Korea without government regulation
 - c. North Korean trade agreements are ineffective
 - d. North Korea is able to produce at its most efficient levels
3. A store can sell either cookies for \$2 apiece or cakes for \$10 a piece. If it chooses to sell cookies, what are the cakes?
 - a. less profitable
 - b. tradeoff
 - c. **the opportunity cost**
 - d. more profitable
4. If the Island of McCoy wants to specialize in producing certain goods, it:
 - a. must have a domestic demand for the goods
 - b. **will probably need to import other goods**
 - c. should follow a protectionist policy
 - d. will eventually use all its resources
5. In free trade:
 - a. tariffs are allowed
 - b. quotas are allowed
 - c. protectionism is allowed
 - d. **no tariffs or quotas are allowed**
6. A country faces scarcity if:
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 - b. taxpayers refuse to pay more taxes
 - c. **it has a limited amount of land**
 - d. the government runs at a deficit
7. A government has to decide if it should spend money on schools or a missile defense system. To do this with economic efficiency it must examine its:
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9. One economic tradeoff the Island of Hatfield has to face is whether to:
 - a. produce energy or food
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- c. trade with the Island of McCoy or not trade with them
 - d. **all of the above**
10. The Island of Hatfield produces wagons in half the time as the Island of McCoy. This means:
- a. No matter what, the Island of Hatfield should specialize in wagon production.
 - b. The Island of Hatfield has a quota system.
 - c. **The Island of Hatfield has an absolute advantage in energy production.**
 - d. Not enough information is provided
11. The Island of Hatfield can't produce unlimited technology because of:
- a. absolute advantage
 - b. **scarcity**
 - c. free trade
 - d. protectionism
12. If the Island of Hatfield wishes to open free trade with the Island of McCoy, it:
- a. **must eliminate all trade barriers**
 - b. must implement quotas first
 - c. can only import and export certain goods
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 - c. comparative advantage
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17. If you choose to take a job at Pizza Hut at \$10 an hour rather than Dominos at \$12 per hour, the job at Dominos is the:
- a. better choice
 - b. tradeoff
 - c. **opportunity cost**
 - d. comparative advantage
18. When a country uses its resources to produce only a few goods, this is called:

6.1. THE GREATER GOOD

- a. **specialization**
 - b. a quota
 - c. a tariff
 - d. protectionism
19. Eliminating all trade barriers is an example of a:
- a. voluntary restraint system
 - b. quota system
 - c. tariff system
 - d. **free trade system**
20. If the Island of Hatfield is more efficient at producing energy and advertising than fruits and vegetables, it:
- a. **should specialize in those goods**
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 - c. should become more efficient in producing fruits and vegetables
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 - b. **a free trade policy**
 - c. a trade agreement
 - d. an absolute advantage
22. Absolute advantage is affected by:
- a. protectionism
 - b. quotas
 - c. **resources**
 - d. free trade
23. The Island of McCoy chooses to produce clothing instead of fruits. This is an example of:
- a. labor inefficiency
 - b. opportunity cost
 - c. scarcity
 - d. **tradeoffs**
24. When deciding to specialize production of a good, the Island of Hatfield must consider its opportunity cost. An opportunity cost is:
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 - b. **the next best production alternative**
 - c. the amount of money it costs to produce the good
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25. The World Trade Organization encourages:
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 - d. governments to use a single currency
26. Protectionism:
- a. restricts imports into a country
 - b. protects some domestic jobs
 - c. may include quotas and tariffs
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27. If a country wants to specialize in the export of certain goods, it should have:

- a. access to the necessary resources for production
 - b. a comparative advantage in production
 - c. an absolute advantage in production
 - d. **both a and b**
28. If the U.S. has a scarce amount of resources:
- a. workers must be protected
 - b. the U.S. should impose tariffs
 - c. **there are not as many goods as people want**
 - d. workers must work harder
29. Using Table 1 below, which island has a comparative advantage in producing advertising?
- a. Hatfield
 - b. McCoy
 - c. **Springfield**
 - d. Abbydale

TABLE 6.20: Hours Needed to Produce Goods

Industry	Quantity	Island of Hatfield	Island of McCoy	Island of Springfield	Island of Abbydale
Farm Equipment	30 machines	12	18	20	21
Advertising	5 slogans	10	18	10	30
Science Technology	10 innovations	19	3	25	6
Energy	1 million kilowatts	6	12	15	20
Shipping	20 tons	4	4	5	6
Construction	50 buildings	2	6	7.5	27
Meat and Poultry	50 pounds	6	15	9	36
Recording Artists	30 tapings	9	15	10	27
Printers	100 copies	3	4.5	2.5	18

30. Using Table 1 above, which island has the absolute advantage in producing meat and poultry?
- a. **Hatfield**
 - b. McCoy
 - c. Springfield
 - d. Abbydale
31. Using Table 1 above, for what good does the Island of Hatfield have both an absolute and comparative advantage?
- a. **energy**
 - b. recording artist
 - c. printer
 - d. not enough information is provided
32. Using Table 1 above, which island should produce advertising?
- a. Hatfield
 - b. McCoy
 - c. **Springfield**
 - d. Abbydale

33. Using Table 1 above, which island should produce printing?
- Hatfield
 - McCoy
 - Springfield**
 - Abbydale

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

John R. Mergendoller, Ph.D. Executive Director

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CHAPTER 7

The President's Dilemma

CHAPTER OUTLINE

7.1 THE PRESIDENT'S DILEMMA



7.1 The President's Dilemma

Unit Overview

Time Required

10-12 hours of class time

Project Scenario

In a mixed-market economy like the United States, the federal government uses fiscal and monetary policy tools to influence the behavior of individuals, firms, and financial institutions. However, in attempting to improve the performance of the nation's economy, the government encounters the problem of resource scarcity. Tradeoffs must be considered; some groups may be harmed in order to help another group in society. To explore these concepts and gain some understanding of macroeconomic analysis, students are presented with the following problemsolving scenario in this project:

Due to a rapid rise in oil prices, the United States is facing a severe economic crisis with high levels of inflation, high unemployment, and slow economic growth. The President, whose approval ratings are plummeting, has asked a Special Task Force of the Council of Economic Advisors to recommend a policy to deal with the crisis without increasing the national debt. The Task Force is asked to make an oral presentation with visual aides to a panel composed of representatives of constituencies that have a targeted interest in the economic solution proposed. As students learn about leading economic indicators and fiscal and monetary policy, letters arrive from three panel members. Each constituent argues for policies that benefit their interest group — unemployed middle-class workers, retired people, and business representatives. Students must consider both supply-side and demand-side options and weigh the costs and benefits of various solutions as they recommend policies that balance the needs of the nation.

Concepts to be Learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- **Budget Deficit**
- **Consumer Price Index**
- **Contractionary Policy**
- **Cost-push Inflation**
- **Demand**
- **Demand-side Theories**
- **Discount Rate**
- **Crowding Out**
- **Economic Indicators**
- **Expansionary Policy**
- **Federal Reserve System**
- **Fiscal Policy**
- **Government Spending**
- **Gross Domestic Product (GDP)**
- **Inflation**

- Interest Rates
- Monetary Policy
- Multiplier
- National Debt
- Open Market Operations
- Opportunity Cost
- Reserve Requirement
- Scarcity
- Supply
- Supply-side Theories
- Tax
- Tradeoffs
- Unemployment Rate

Placement In Curriculum

The President's Dilemma is designed to be the fifth *Project Based Economics* unit students complete. This unit teaches students about macroeconomic concepts and analysis, including fiscal and monetary policy, and economic indicators. Prior to undertaking this problem, students should be familiar with the fundamentals of market economics as learned in **Running in Place**, **The Invisible Hand**, **Monopoly's Might**, and **The Greater Good**.

Sequence and key content of PBE units

Essential Units:

- a. **Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- b. **The Invisible Hand** – free markets and supply incentives
- c. **Monopoly's Might** – competitive markets and supply/demand forces within them
- d. **The Greater Good** – comparative advantage and free trade
- e. **The President's Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)

NCEE Content Standards Addressed

The President's Dilemma addresses the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standards.

TABLE 7.1:

Standard #	Economic Concept
1	Scarcity
2	Opportunity Cost
12	Interest Rates
15	Investment
18	Gross Domestic Product
19	Unemployment and Inflation
20	Fiscal and Monetary Policy

Project Based Learning and Project Based Teaching

Definition of PBL

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

Components of Project Based Economics Units

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”

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- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The **Driving Question** is written in a way that focuses students on the exact problem they need to resolve. The Driving Question is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class' unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are not economic terms — may also be defined on the spot, if necessary for understanding.

NOTE: The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CDROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity.

In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- Notes to the Teacher: At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
 - Arrange for peers to check each others’ understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide

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for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer's if they have swapped and read each other's logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
 - Talking with certain students or groups to address their misconceptions and misunderstandings
 - Giving additional textbook reading assignments, and/or directing students to online resources and explanations
 - Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Maximizing the Effectiveness of Project Based Teaching

- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based

Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE*

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unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.

- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching The President’s Dilemma

Sequence of the Unit

Like the other BIE *Project Based Economics* units, students complete **The President’s Dilemma** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible — at least during the first several times **The President’s Dilemma** is taught. The underlined phrases are cross-referenced and discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

Launching the Project

1. Students receive **Entry Document, the memo from the President**, and discuss it as a whole class.

Framing the Inquiry

2. Students develop the **initial “know”** list with the teacher (whole-class discussion).

3. Students develop the **initial Driving Question** with the teacher (whole-class discussion).
4. Students develop the **initial “need to know”** list with the teacher (whole-class discussion).

Problem-Solving and Learning Activities

5. Teacher provides **clarifying lesson # 1** on *economic indicators*.
6. Students receive **national statistics table** and review it with the teacher (whole-class discussion).
7. Students write **memo comparing current crisis** with economic indicators in the past (in small groups).
8. Students receive **letter from Maria Bautista**, Policy Analyst for the Campaign for Job Security, discuss it as a whole class..
9. Teacher provides **clarifying lesson # 2** on *fiscal policy tools*.
10. Students individually write **first Project Log entry**.
11. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
12. Students receive **letter from Angela Soracco**, president of a retired persons association, and discuss it as a whole class.
13. Teacher provides **clarifying lesson # 3** on *monetary policy tools*.
14. Students individually write **second Project Log entry**.
15. Teacher reviews **individual Project Log entries** to assess understanding of economic concepts.
16. Students receive **letter from William M. Jorgenson**, CEO of the Henry J. Car Corporation, and discuss it as a whole class.
17. Students individually write **third Project Log entry**.
18. Teacher reviews **individual Project Log entries** to assess understanding of economic concepts.
19. Students **work on policy recommendation** (in small groups).
20. Students receive **memo from Chief of Staff**, and discuss it as a whole class.
21. Students **finalize the know/need to know** list (whole-class discussion).
22. Students **finalize the Driving Question** (whole-class discussion).
23. Teacher shares **supplied rubric with students** to guide their work.

Presentation, Assessment and Debrief

24. Students **work on policy recommendation and plan presentation** (in small groups).
25. Students **present policy recommendations** (in small groups).
26. Teacher uses supplied rubric to **assess presentations** and written summaries.
27. Teacher conducts **debrief to clarify and consolidate** students’ understanding of key economic concepts (as necessary).
28. Teacher manages **student reflection** on the 21st century skills practiced and the process of learning in PBL.
29. Teacher uses supplied **multiple-choice test** to assess individual students’ knowledge of key economic concepts.
30. Teacher makes **notes on adjustments to the unit** to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

0. **Teacher prepares for successful project implementation.**

There are a number of issues that must be considered before embarking on a project with students. These include:

- How much time will be devoted to the project?

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- What economics content resources need to be prepared in advance (textbooks, articles, websites, etc.)?
- Do all students have the skills they need to tackle the project — including basic literacy skills as well as the ability to work in teams, make presentations, and conduct research? If not, is it necessary to pre-teach some of these skills, make sure students who need it have adequate support, or deal with these challenges in other ways?
- How will student groups be formed?
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the library / media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/minilecture materials are ready — or at least underway.

Launching the Project

1. **Students receive Entry Document, the memo from the President, and discuss it as a whole class.**

The memo from the President may be found in Section IV, *Student Materials*.

Have one or more students read aloud the Entry Document while the whole class focuses on it.

The memo can be projected so it can be read by the whole class. Alternatively, copies of the memo can be duplicated and passed out to students, or viewed online as an email or document posted to a website.

Potential Hurdle: As this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of Memo: Due to a rapid rise in oil prices, the United States faces a severe economic crisis with high levels on inflation, unemployment, and negative economic growth. The President, fearing prospects for reelection, has asked a Special Task Force of the Council of Economic Advisors to recommend a policy that does not increase the national debt. The Task Force is asked to make an oral presentation with visual aides to a panel composed of representatives of various constituencies. The President also asks the Task Force, as a first step, to compare current economic indicators with statistics from the past.

Economics Content Note: The memo contains a number of economic terms, such as unemployment, inflation, and economic growth. This is intentional. It is assumed that students will either not understand these terms or have misconceptions regarding their meanings. Do not, at this point, explain to students the meaning of these terms. Tell students they should put these terms on the list of what they “need to know” to resolve the problem. Figuring out the meaning of economic terms is something students should, as much as possible, do for themselves (with the teacher’s monitoring and guidance) once they begin working to solve the problem.

Framing the Inquiry

2. **Students develop the initial “know” list with the teacher (whole-class discussion).**

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure *to only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Although each class generally produces a unique know / need to know list, an example of the type of items that might appear on the first “know” list follows.

Example of Initial Know List

What do we know?

- The President sent this memo to a special task force of the Council of Economic Advisors
- There is an economic crisis caused by rising oil prices
- There have been oil "supply shocks"
- Unemployment is high –12.5%
- Inflation is high –9%
- The economy has slowed the past two quarters
- Middle managers are also losing their jobs
- Homelessness is rising rapidly in cities
- Businesses are contracting
- We need to recommend a policy to deal with the crisis
- The President is being criticized for not doing enough and popularity has dropped
- We need to make a presentation with visuals to the President and a group of people
- We need to turn in a written summary before our presentation
- We cannot increase the national debt
- The President is worried about reelection
- The President also wants a memo ASAP comparing this economic crisis to the past
- The President is going to make a speech to the nation

At this point, do not ask about solutions, as this might negate or offset information gathering, which is the most important part of the problem-solving process right now.

3. Students develop the initial Driving Question with the teacher (whole-class discussion).

After students have discussed the memo from the President, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion.

A Driving Question is a succinct declaration of the general problem students are to solve. In PBL it takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial Question may look something like:

How can we, as **the Special Task Force of the Council of Economic Advisors**, develop a **policy**, so that **we fix the economy, without increasing the national debt?**

At this point, it is fine to keep the Driving Question ill-defined. It is not necessary for the Driving Question to contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the scenario unfold.

Potential Hurdle: Students may want to write a Driving Question that includes the memo they are asked to write comparing this crisis with economic conditions in the past. It would be

OK to either write a lengthier Driving Question to include this, or write a "short-term" Question after writing the "long-term" one above.

4. Students develop the initial need to know list with the teacher (whole-class discussion).

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The next step in the problem-solving process is to coach students to identify information they need to know in order to answer the Driving Question. Again, guiding students to pay close attention to all parts of the memo, create a “What Do We Need to Know?” list. If students are missing a key piece of information about the scenario, the content, or their task, ask questions to elicit items for the list. *This is critical because everything students are taught in the unit must spring from this list.*

At this point in the problem-solving process, students will probably list things that they actually do not need to know. Allow students to do so. The class will return to the know / need to know list again later, having learned more about what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of Project Based Learning is to distinguish what information is and is not necessary to successfully answer the Driving Question. As much as possible, encourage students to identify irrelevant information on their own.

Although each class generally produces a unique know / need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Need to Know List

What do we need to know?

- What is the Council of Economic Advisors?
- Who is the President? Is he or she a Democrat or Republican?
- What is a supply shock?
- How bad is the crisis compared to other ones?
- What is inflation?
- What is economic growth?
- Why is there high unemployment?
- What is a middle manager and why are they important?
- What does “businesses are contracting” mean?
- When is unemployment high enough to be a problem for the country?
- What caused the rise in oil prices?
- Can we reduce the price of oil?
- Can we increase the supply of oil?
- What can the government do to help with the crisis?
- When is the election?
- Why did high oil prices cause a crisis?
- What was the President’s economic policy before now?
- How long has the crisis been going on? Will it end eventually?
- What are leading economic indicators?
- How have situations like this been dealt with in the past?
- Do other potential presidential candidates have solutions to the problem?

Problem-Solving and Learning Activities

5. Teacher provides clarifying lesson # 1 on *economic indicators*.

For information to include in this lesson see “Economics Review” in Section V, *Teacher Materials*.

Note that this lesson will help answer students’ questions on the “Need to Know” list about inflation, unemployment, economic growth, leading economic indicators, and so on.

This lesson can be provided to students using a combination of mini-lectures, activities, and reading selections from a textbook and other print and online resources, some of which may be assigned as homework.

Economics Content Note: This lesson should emphasize the how statistics can be used to gauge the health of an economy. Students should recognize that economic indicators are used to monitor how well an economy is achiev-

ing its economic goals (economic growth, high employment, and low inflation) and that different indicators play different roles in measuring the economy. Leading indicators predict where the economy might be going. Coincident indicators show where the economy currently stands and lagging indicators are slow to respond to economic changes.

6. Students receive national statistics table and review it with the teacher (wholeclass discussion).

The table “National Statistics for Selected Years” may be found in Section IV, *Student Materials*.

This table may be used in conjunction with the clarifying lesson above, or may be explained just afterward. This table contains key economic indicators for various years: Nominal and Real GDP, Percent change in GDP, Discount Rate, Consumer Price Index, Rate of Inflation, Unemployment Rate, and Public Debt. Remind students that their first task is to write a memo comparing current economic data with the past. Students should use the information in this table to place the current economic crisis within an historical context.

7. Students write memo comparing current crisis with economic indicators in the past (in small groups).

Now form students into small groups of four to six — these will be the Special Task Force teams for the rest of the project. See notes on forming groups in Section II above, under “Managing Small Group Work.”

Ask students to work in their groups to analyze and discuss the table in comparison with what they know about the current crisis. Circulate among groups to answer questions and to keep students focused on the columns showing inflation rates, unemployment rates, and changes in economic growth. Allow students enough time to write their memo in class so it is a group effort.

Economics Content Note: When you collect the memos, look for evidence that students understand that the current crisis is indeed serious, because:

- Current levels of unemployment are higher than in most other periods — except the Great Depression years of 1933, 1939, and 1940.
- Current levels of inflation are higher than all periods — except in 1942 during supply shortages early in World War II, and in 1980 after rapid oil price increases of the late 1970s.
- Negative GDP growth also is relatively rare — again, seen only in 1933 (Great Depression), in 1946 when WWII ended and wartime production levels dropped, and slightly in 1976 and 1980.

You may wrap up this step with a whole-class discussion if you wish.

8. Students receive letter from Maria Bautista, Policy Analyst for the Campaign for Job security, and discuss it as a whole class.

The letter from Maria Bautista may be found in Section IV, *Student Materials*.

Read this letter aloud as a class, then discuss what aspect of the economic crisis the writer is focused on and why — and what she wants the President to do.

Synopsis of Letter from Maria Bautista: Since she represents a worker’s political action committee, Ms. Bautista focuses on unemployment. She highlights the growing sense of despair among workers around the country who fear they soon will lose their jobs and won’t find reemployment opportunities. She warns that the recently unemployed and angry Joe Brezinski will represent her organization at the presentation by the President’s economic task force.

Economics Content Note: Students should be able to see that demand-side policies can be targeted in many different ways. While they often focus policies on working middle-class individuals, (e.g. “let’s help by giving them a tax break”), they should be coached see that, while middle class people with jobs appreciate these policies, policies should be designed for the middle class people without jobs — i.e., the demand-side policies. As a teacher, your

major focus is to show students the myriad of policies that can be enacted, with each policy focusing benefits on a different group of individuals.

Optional: You and / or your students may wish to add items from the letter to the know/need to know list at this point.

9. Teacher provides clarifying lesson # 2 on fiscal policy tools.

For information to include in this lesson see “Economics Review” in Section V, *Teacher Materials*.

Note to students that this lesson will help their questions on the “Need to Know” list about what the government can do to help ease the economic crisis.

This lesson can be provided to students using a combination of mini-lectures, activities, and reading selections from a textbook and other print and online resources, some of which may be assigned as homework.

Economics Content Note: This lesson is designed to provide students with a comprehensive overview of fiscal policy tools, including criticisms of them. Students should understand how government spending or taxation can be used to expand the economy or to contract it and why critics believe it to be totally ineffective. Students should also understand how fiscal policy can be targeted toward consumers (the demand side) or firms (the supply side). The lesson should also introduce students to the multiplier effect.

10. Students individually write first Project Log entry, answering the following question:

How can fiscal policy be used to help workers like Joe Brezinski?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

11. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Problem Based Learning and Problem Based Teaching*.

Economics Content Note: Be sure students show they understand how expansionary fiscal policy might be used to pull the economy out of its current crisis. Make sure students don’t suggest policies that might increase the debt (e.g., increase spending and reduce taxes), since the memo from the president explicitly states that debt cannot be increased. Students might quickly realize that most policies they develop will increase debt. They need to consider whether or not they will try to convince the President to increase the debt. If you notice that students do not understand these concepts, you may need to further clarify them by talking with the whole class, individuals, or small groups.

12. Students receive letter from Angela Soracco, president of a retired persons association, and discuss it as a whole class.

The letter from Angela Soracco may be found in Section IV, *Student Materials*.

Read this letter aloud as a class and then discuss what aspect of the economic crisis the writer is focused on and why — and what she wants the President to do.

Synopsis of Letter from Angela Soracco: Since Ms. Soracco represents a retired persons association, she is most concerned about rising prices. She notes that most retired Americans have fixed incomes, so inflation makes basic necessities less affordable and erodes the value of assets such as pensions and homes. And since they rely on Social Security benefits, older people would be harmed by any reductions in these transfer payments.

Economics Content Note: Some students may correctly point out that Social Security benefits are indexed to inflation and, as a result, rising prices should not be a concern for the elderly. Coach students to see that Social Security

is only part of retired people’s income. They also rely on pensions, which are usually fixed in their dollar amount, and on assets that have been accumulated throughout their work life (e.g. their house). Students should be able to distinguish between monetary policies to curb inflation and fiscal policies to stimulate spending.

Optional: You and / or your students may wish to add items from the letter to the know / need to know list at this point.

13. Teacher provides clarifying lesson # 3 on monetary policy tools.

For information to include in this lesson see “Economics Review” in Section V, *Teacher Materials*.

Note to students that this lesson will help answer their questions on the “Need to Know” list about what the government can do to help ease the economic crisis.

This lesson can be provided to students using a combination of mini-lectures, activities, and reading selections from a textbook and other print and online resources, some of which may be assigned as homework.

Economics Content Note: This lesson is designed to provide students with a comprehensive overview of monetary policy tools. Students should understand the tools the Federal Reserve can use to expand the economy or to contract it. The lesson should also introduce students to the main role of monetary policy: to stabilize the money supply.

14. Students individually write second Project Log entry, answering the following question:

How can monetary policy be used to help people represented by the Silver Panthers of America?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

15. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Problem Based Learning and Problem Based Teaching*.

Economics Content Note: Be sure students show they understand how monetary policy might be used to curb inflation or to stimulate the economy. If students forget to distinguish between cost-push and demand-pull inflation when discussing monetary policy, coach them to remember the cause of price increases in the project scenario — rising oil costs. Remind them that monetary policies that curb demand-pull inflation are not necessarily effective when inflation is caused by cost-push factors. If you notice that students do not understand these concepts, you may need to further clarify them by talking with the whole class, individuals, or small groups.

16. Students receive letter from William M. Jorgenson, CEO of the Henry J. Car Corporation, and discuss it as a whole class.

The letter from William M. Jorgenson may be found in Section IV, *Student Materials*.

Read this letter aloud as a class, then discuss what aspect of the economic crisis the CEO is focused on and why — and what he wants the President to do.

Synopsis of Letter from William M. Jorgenson: CEO Jorgenson advocates for a supply-side solution to the crisis. He reminds the President that rising costs of production have led to higher prices for automobiles, fewer sales and lower profit levels. He warns that the continued support of corporate leaders depends on the President finding solutions that meet the needs of business.

Economics Content Note: Coach students to focus on the challenges of business (e.g. they want cheap labor and capital) and the demand for their product. The latter, which students have more difficulty seeing, is important to acknowledge because business will only operate with a demand for their product. Hence, unemployed workers

could result in both cheaper labor for production and a lower demand for cars because of consumers' inability to pay for the goods.

Students should weigh the benefits of each of these potential tradeoffs and think seriously about what type of supply-side policies would most benefit firms given the scenario of the project.

Optional: You and / or your students may wish to add items from the letter to the know/need to know list at this point.

17. Students individually write ird Project Log entry, answering the following questions:

How might corporate leaders, unemployed workers, and retired people respond differently to the government's use of demand-side policies? How might each group respond differently to supply-side policies?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

18. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Logs, see “Formative Assessments” in Section II, *Project Based Learning and Project Based Teaching*.

Economics Content Note: Students should see that, for example, the Silver Panthers of America and unemployed workers might want demand-side policies such as transfer payments but the CEO will argue that transfer payments create work (and / or investment) disincentives. Unemployed workers want demand-side policies that stimulate employment, perhaps through government jobs, but the CEO wants the lower wages that result from high unemployment and believes that government employment (and spending) hurts business by competing for the best workers (or monies). Taken as a group, all letters illustrate the tradeoffs and opportunity costs involved in developing policies that might help to solve the economic crisis. If you notice that students do not understand these concepts, you may need to further clarify them by talking with the whole class, individuals, or small groups.

19. Students work on policy recommendation (in small groups).

Students should now be given some time — approximately one whole class period — to begin to develop their policy recommendations. They should work in the same small groups that wrote the memo earlier comparing the current crisis to economic indicators in the past. Since this is the first lengthy period of time they have been given in class to discuss possible solutions to the problem, coach students to hold off on doing any planning for their presentation and visuals yet. Suggest they focus only on fiscal and monetary policy options at this point.

Economics Content Note: Be sure to remind students, if necessary, that the current crisis is caused by the reduction in oil supply, which increased the price of oil. The increased price of 'oil not only inflates prices, it also creates unemployment as layoffs occur. The increased prices reduce the consumer's ability to purchase goods and services. A failure to see the cost-push cause of the crisis will divert students from appropriate economic policy solutions. Also, students must distinguish between the demand-side and supply-side emphasis for policy solutions. They should learn that within each emphasis, there is the potential to use monetary and fiscal policy tools.

20. Students receive memo from Chief of Staff, and discuss it as a whole class.

The memo from the Chief of Staff may be found in Section IV, *Student Materials*.

Read this final memo aloud as a whole class. Make sure students clearly understand what is expected of them in terms of the format and content of the presentation.

21. Students finalize the know/need to know list with the teacher (whole-class discussion).

The additional information gained from the memo from the Chief of Staff does not have to be added to the final know list, since this would basically be a “copying” task. However, students may wish to add more items to the know list that they have thought about in terms of the content or the scenario, or move items over from the need to know list, so allow them a final opportunity to do so.

Revisit the need to know list for the last time and make sure students are ready to solve the problem by answering any remaining questions or directing students toward the necessary resources

22. Students finalize the Driving Question with the teacher (whole-class discussion).

Students should write the final version of their Driving Question at this point. The final Driving Question should resemble:

How can we, as the Special Task Force of the President’s Council of Economic Advisors, develop and present recommendations for dealing with the economic crisis using fiscal and monetary policy so that we meet the needs of a variety of constituents and not increase the national debt?

23. Teacher shares supplied rubric with students to guide their work.

A rubric for the oral presentation and written summary may be found in “Assessment Tools” in Section V, Teacher Materials.

Give a copy of the rubric to each student, or display it on an overhead or computer projector so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their oral presentation and writing skills, while important, are given less weight on the rubric. If you are altering the rubric’s point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Presentation, Assessment, and Debrief

24. Students work on policy recommendation and plan presentation (in small groups).

Now it is time for students, in their groups, to synthesize all they have learned and develop their ideas for how the President could address the economic crisis. Allow a substantial amount of time for this step — two or three class periods may be required — and some homework also may be needed. Listen, observe, and actively coach students as you circulate among groups in the classroom. Remind students to use the rubric to guide their work

Economics Content Note: Students’ policies must be grounded in the parameters of the project scenario: cost-push inflation with rapidly rising oil prices; high levels of both unemployment and inflation, and slowing economic growth. Furthermore, because the solutions the students propose cannot increase national debt, they must discuss how they will increase government spending or reduce taxes, or subsidize research without incurring more debt.

Visuals may be produced on chart/poster paper, overhead transparencies, or as PowerPoint slides. Students may choose to create any kind of graphs, charts, lists, or other displays that they think will add to their oral presentation.

A draft of the written summary and the presentation visuals should be checked by the teacher before the presentation, to comment on their quality and correct errors. If time does not allow for the summaries to be reviewed outside of class time, be sure to spend time with each group while they work during the days before the presentation.

Potential Hurdle: Students may want to suggest that the U.S. government invest in a massive research and development effort to produce alternative fuels and energy sources. This would be an acceptable use of fiscal policy, but be sure this does not become their primary solution to the problem, which is solving the *current* economic crisis. Other fiscal and monetary policy tools should be emphasized as more immediately effective steps.

25. Students present policy recommendations and turn in written summaries (in small groups).

7.1. THE PRESIDENT’S DILEMMA

For more guidance on managing the presentations, see “Presentation and Critique of Answers to Driving Question” in Section II above.

Make sure students have their visual aides ready and remind them about the strict 5 – 8 minute time limit.

Each group makes its presentation to a panel composed of the President (usually the teacher) and the representatives from the Silver Panthers, the Campaign for Job Security, and the Henry J. Car Corporation. The President acts as moderator and has the responsibility for bringing the overall economic emphasis to the discussion, including the issue of not raising the national debt. The President also keeps an eye on overall costs and benefits, including the political effects of the task force’s recommendations on various constituencies. If possible, invite guests from outside the classroom to play the roles of the constituency representatives, since this motivates students to do a good job. If this is not possible, you as the teacher will have to wear several hats and switch roles for various questions.

After the presentation, allow from three to five additional minutes for panel members to question students about their policies.

Panel Member Questions may be found in “Assessment Tools” in Section V, *Teacher Materials*.

Potential Hurdle: These presentations require careful management. Depending on the size of the class and number of groups, a second day for presentations may be necessary. In this PBE unit in particular, it is best if students do not see each other’s presentations before they make theirs, or unfair advantage and plagiarism could result.

Panel members should be limited to three questions each to allow enough time for as many presentations as possible in one class period. To keep the panel members from straying from economic concepts, scripts for their character are provided in Section V, *Teacher Materials*. The President / teacher’s questions should help students see any potential contradictions in their policy.

26. Teacher uses supplied rubric to assess presentations and written summaries.

The rubric for the presentations and written summaries may be found in “Assessment Tools” in Section V, *Teacher Materials*.

As you hear and see the students’ presentations and read their written summaries, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

27. Teacher conducts a debrief to clarify and consolidate students’ understanding of key economic concepts.

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students’ solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

Economics Content Note: It is important for students to see that any policy they develop will have underlying tradeoffs and opportunity costs. That is, policies designed to help one group will often hurt another group. Because

politicians often disguise these opportunity costs in their speeches, students are often reluctant to propose or acknowledge that tradeoffs exist. The debriefing should help students see that, because resources are scarce, helping one group often means hurting another.

Care should also be taken to ensure that students understand the differing goals of each type of policy: monetary and fiscal, demand-side and supply-side. Economists who argue for supply-side policies place relatively more importance on business activity while economists who argue for demand-side policies place more emphasis on demand in households. You could go back to the circular flow diagram presented in the debrief portion of the **Running in Place** *PBE* unit and show students how businesses and households are part of the same economy, but demand-side and supply-side policies are directed at different entities.

28. Teacher manages student reflection on the 21st century skills practiced and the process of learning in PBL.

Students should have a chance to discuss the process of learning in PBL, and to reflect on their use of 21st century skills such as critical thinking, collaboration, and presentation. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible “right answers” to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

29. Teacher uses supplied multiple-choice test to assess individual students’ knowledge of key economic concepts.

The multiple-choice test for this unit may be found in “Assessment Tools” in Section V, *Teacher Materials*.

30. Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.

Teachers inevitably recognize how to make **The President’s Dilemma** more effective after they have taught it. We encourage you to note these thoughts quickly, so they can review your ideas for improvement the next time you teach the unit.

Teaching Tips

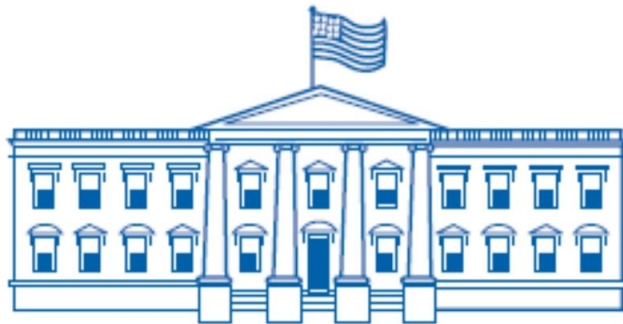
Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school Economics teachers. We include their advice below.

- This unit provides a great opportunity to discuss current economic events. Current levels of inflation and unemployment can be easily woven into a benchmark lesson and used as a comparison to the economic crisis presented in this problem. Budget deficits and public (national) debt (and their components) can also be discussed so that students can see how and what current programs must be sacrificed in order to reduce deficits.

7.1. THE PRESIDENT’S DILEMMA

- In this unit, students have a tendency to offer political solutions to the problem instead of economic solutions. Accordingly, try to minimize the amount of political material and information provided to students. Also try to avoid using real politicians or political parties as examples, which could lead students to develop what they think is a “Democratic” or “Republican” response to the problem.
- While it seems obvious to many teachers that this problem has origins in the 1970s OPEC-induced shortages, students often miss this connection. It is best not to point out the historic parallels until the debriefing because students may simply adopt the policies that were undertaken at the time and not reason through the economic problems in adopting and devising policy.

Student Materials



*Office of the President
United States of America*

TO: Special Task Force of the Council of Economic Advisors

FROM: President of the United States

RE: Policy Recommendations for Current Economic Crisis

As you know, the recent oil supply shocks and the rapid rise in oil prices has produced an economic crisis. As a result, we are facing:

- High level of unemployment (12.5%) affecting all sectors of the economy— middle managers are now losing jobs at increasing rates and homelessness is rising rapidly in urban areas
- High rate of inflation (9% annually) — people are concerned about being able to afford basic necessities, while businesses are contracting
- Dramatic slowing of economic growth in the past two quarters—real GDP has dropped by 13% .

I am hearing a great deal of criticism from all sides about how we’re not dealing strongly enough with this—my approval ratings have plummeted. We need to develop an economic policy that will ease the crisis. I have therefore convened this special task force of the Council of Economic Advisors. Of course, any policy we develop cannot increase our already-too-high national debt.

Once you have developed your policy, prepare a presentation, using visuals, that explains and justifies your policy. A written summary of your presentation must be on my desk before you make it. You will deliver the presentation to me and a panel of representatives of different constituencies. We need to get feedback on whether or not voters will find the policy acceptable, a critical necessity if I am to have a hope of being reelected this year and you have a hope of keeping your politically-appointed jobs. The panel will ask you questions and expect you to defend your

plan. If this group accepts your recommendations, I will use your ideas as the basis for a speech to the nation the following week.

Some people are saying this could be the worst economic crisis the nation has ever confronted. Before you get started on your policy recommendation, send me a memo ASAP with your analysis of how our current unemployment, inflation, and economic growth compare to leading economic indicators in the past.

TABLE 7.2: NATIONAL STATISTICS FOR SELECTED YEARS

	GDP	GDP	Change	Change					
	Nominal	Real	Change	Change	Discount	Consumer	Rate of	Unemploy	Public
	billions	(2000	(nomi-	(real)	rate	price in-	inflation	- ment	Debt
		dollars)	nal)			dex		rate	(nomi-
						(1982-			nal)
			percent	percent	percent	1984=100)	percent	% of	billions
								civilian	
								labor	
								force	
1929	103.6	865.2	—	—	5.17	17.10	0.00	3.20	16.9
1933	56.4	635.5	−4.0	−1.3	2.50	13.00	−5.10	24.9	22.5
1939	92.2	950.7	7.0	8.1	1.00	13.90	−1.40	17.20	40.4
1940	101.4	1,034.1	10.0	8.8	1.00	14.00	0.70	14.60	42.9
1942	161.9	1,435.4	27.7	18.5	0.88	16.30	10.90	4.70	72.4
1944	219.8	1,806.5	10.7	8.1	0.50	17.60	1.70	1.20	201.0
1946	222.3	1,589.4	−0.4	−11.0	0.88	19.50	8.30	3.90	269.4
1950	293.8	1,777.3	9.9	8.7	1.60	24.10	1.30	5.30	257.3
1955	414.8	2,212.8	9.0	7.1	1.92	26.80	−0.04	4.40	274.3
1960	526.4	2,501.8	3.9	2.5	3.50	29.60	1.70	5.50	286.3
1965	719.1	3,191.1	8.4	6.4	4.04	31.50	1.60	4.50	317.2
1970	1,038.5	3,771.9	5.5	0.2	5.94	38.80	5.70	4.90	370.9
1975	1,638.3	4,311.2	9.2	−0.2	6.21	53.80	9.10	8.50	533.1
1978	2,294.7	5,015.0	13.0	5.6	7.54	65.20	7.60	6.10	771.5
1980	2,789.5	5,161.7	8.8	−0.2	11.75	82.40	13.50	7.10	907.7
1985	4,220.3	6,053.7	7.3	4.1	7.67	107.60	3.60	7.20	1,823.1
1990	5,803.1	7,112.5	5.8	1.9	6.96	130.70	5.40	5.60	3,233.3
1995	7,397.7	8,031.7	4.6	2.5	5.21	152.40	2.80	5.60	4,973.9
2000	9,817.0	9,817.0	5.9	3.7	5.73	172.20	3.40	4.00	5,674.1
2005	12,455.8	11,048.6	6.3	3.2	4.19	195.30	3.40	5.10	7,932.7
2006	13,246.6	11,415.3	6.3	3.3	5.96	201.60	2.00	4.60	8,506.9

CAMPAIGN FOR JOB SECURITY

Keep America Employed!

TO: The President of the United States

FROM: Maria Bautista, Policy Analyst, Campaign for Job Security

RE: Unemployment

The Campaign for Job Security (CJS), as you know, is a fast-growing worker's political action committee. Four months ago CJS asked me to conduct a series of public forums and private meetings to determine the mood of workers across the nation, in light of the rising levels of unemployment among the middle class. After my conversations

7.1. THE PRESIDENT'S DILEMMA

with citizens throughout our country, I think you should be most concerned about the growing sense of economic insecurity and despair among middle class Americans. Unemployment is their major worry—either because they've lost their jobs or fear it's about to happen.

Currently, 52% of employed workers are concerned about losing their jobs. Because many of these workers are long-term employees of their firms or factories, their reemployment opportunities would not be good. America needs to keep them employed! Perhaps you should implement measures that increase the buying power of the middle class and that provide training for individuals that lose their jobs. The middle class needs support to maintain their lifestyle.

Thank you for inviting CJS representative Joe Brezinski to hear the presentation by your Task Force and voice the concerns of our organization. You should know that Joe has recently lost his job and is worried about losing his home. Be prepared, he is angry.



TO: Office of the President The White House, Washington, D.C.

FROM: Angela Soracco President, Silver Panthers of America

RE: Eroding Value of Assets

We are quite concerned about rapidly increasing prices and their potential impact on the relatively fixed incomes of older Americans. Inflation is eroding the value of our assets such as our pensions and our homes. Our dollars can no longer stretch far enough to afford the basic necessities of living: rent, food, and health care. Increasingly, we are reliant upon our Social Security and any reduction in these payments will further limit our ability to buy basic necessities.

Most of us have worked hard all of our lives to create a nest egg so that we could enjoy the fruits of our labor in our old age. Perhaps it would be beneficial for you to speak to the chair of the Federal Reserve and remind him that rising prices are the most critical issue facing the nation during these difficult economic times.

After all, what kind of nation would neglect those who have dedicated their working lives to their country?

Henry J. Car
Office of the CEO
Henry J. Car Corporation

Memorandum

TO: President of the United States

FROM: William M. Jorgenson, CEO, Henry J. Car Corporation

RE: Current Economic Crisis

As per our discussion at the Corporate Leaders Forum held at Camp David last week, I want to remind you of my concerns regarding the current economic crisis and to reiterate how I think this crisis should be handled.

As you know, the rising cost of production associated with the increased price of oil has made it necessary for us to increase the prices of our automobiles. As a result, fewer cars are being sold and our profit has fallen. Clearly, businesses cannot survive in such an environment. The success of big business is reliant on a supply-side strategy to solve the crisis. I am not sure that you agree with this. However, the continued support of your administration by the Corporate Leaders Forum is dependent upon your following this strategy.

I appreciate your invitation to join the panel of constituent groups who will hear your economic task force present their recommendations.

Remember, the business of America is business.

OFFICE OF THE CHIEF OF STAFF

TO: Special Task Force of the Council of Economic Advisors

FROM: Jesse Sloan, Chief of Staff

RE: Details on your presentation on the economic crisis

The President asked me to send you the following parameters for your presentation:

- a. You have a minimum of five and a maximum of eight minutes to speak, using your visual aides.
- b. Your presentation has to demonstrate an understanding of the economic problem.
- c. Your presentation must include the monetary and fiscal policy options you've considered.
- d. You must explain the options you chose as your solution and the reasons why you chose them.
- e. Please explain the economic costs of your solution and why the benefits outweigh the costs.
- f. Be prepared for questions from the President and the following constituent group representatives:
 - Joe Brezinski, representing unemployed workers and the Campaign for Job Security
 - Angela Soracco from the Silver Cougars of America, representing retired people
 - William M. Jorgenson, CEO, Henry J. Car Corporation

Teacher Materials

Economics Review

Monetary Policy

The Federal Reserve (Fed) regulates and manages the money supply in accordance with the levels of output (and employment) and prices. It has three tools at its disposal to alter the money supply.

- a. **Open Market Operations.** The Fed (Federal Reserve) buys and sells government securities to commercial banks and to the general public. The buying of bonds increases the money supply by putting dollars into circulation and the selling of bonds decreases money supply by removing dollars from circulation. *This is the primary tool used by the Fed to alter money supply.*
- b. **Reserve Ratio.** This is the mandated percentage of deposits that banks are required to keep. If the Fed increases the reserve ratio, it reduces the money supply by increasing the amount of cash that a bank has to keep in its vault (required reserves). By increasing the required reserves for banks, the Fed decreases the amount of the banks' excess reserves and, hence, the amount of money that banks have to loan. If the Fed reduces the reserve ratio, it increases money supply by decreasing the amount of required reserves and, hence, increasing the amount of excess reserves and loanable funds.

7.1. THE PRESIDENT'S DILEMMA

- c. **Discount Rate.** This is the interest rate that the Fed charges on money loaned to commercial banks. Many short term interest rates are tied to the discount rate. If the Fed increases the discount rate, it decreases money supply (through the money multiplier) by decreasing borrowing (increased interest rates). If the Fed decreases the discount rate, it increases the money supply (through the money multiplier) by stimulating borrowing (decreased interest rates). Because banks typically do not borrow much money from the Fed and because success of this monetary policy depends upon the actions of borrowers, *altering the discount rate to change money supply is not used often. Instead, altering the discount rate is often used to send a signal to financial markets as to the type of monetary policy the Fed is undertaking.*

Easy (Expansionary) Monetary Policy

Policies to increase the money supply are used when growth in the economy is “too slow.” That is, the economy is faced with unemployment and deflation. To increase the money supply the Fed would:

- buy securities
- reduce reserve ratio
- lower discount rate

↑ Money Supply ⇒ ↓ interest ⇒ ↑ investment ⇒ ↑ GDP

An expansionary monetary policy is effective when the economy is sluggish (falling GDP). It stimulates investment, which ultimately expands firm production and employment. If it is invoked when the economy is overheated (rapidly expanding GDP and inflation) then an expansionary monetary policy further fuels inflation. If prices are rising due to cost-push factors and the economy is sluggish, as in our problem, then increasing money supply to expand the economy may have little impact on price levels.

Tight (Contractionary) Monetary Policy

Policies to decrease the money supply are used when growth in the economy is “too fast.” That is, the economy is faced with cost-push inflation created by labor shortages. To decrease the money supply the Fed would:

- sell securities
- increase reserve ratio
- raise discount rate

↓ Money Supply ⇒ ↑ interest ⇒ ↓ investment ⇒ ↓ GDP

A contractionary monetary policy is effective when the economy is overheated (rapidly increasing GDP and inflation). It is used to decrease investment and slow economic expansion. If invoked when the economy is sluggish (declining GDP and high levels of unemployment), then a contractionary monetary policy further deepens the recession. If prices are rising because of cost-push factors—and not because the economy is overheating—tight monetary policies may have little impact on slowing inflation.

Thus, contracting the money supply as a solution for our problem would, in theory, decrease GDP, increase unemployment, and have little impact on prices.

Fiscal Policy

Advocates of fiscal policy believe that the government’s decisions about spending and taxing can influence the equilibrium of the nation’s GDP. More specifically, a fundamental function of the government’s *spending and taxing* policy is to stabilize the economy. This stabilization is achieved in part through the manipulation of the public budget — government spending and tax collections — for the expressed purpose of increasing output and employment or reducing the rate of inflation.

In addition to its role in stabilizing the economy, the federal government is also concerned with the *provision of public goods and services and the redistribution of income*. In this regard, the specific types of spending and taxing policies used for stabilization are important. For example, the government could engage in an expansionary policy

by increasing the dollars going toward education, by serving as employer of last resort for low-skilled, unemployed workers, or by decreasing income taxes for the wealthy. While all of these scenarios might have the same expansionary impact on the economy as a whole, they would have very different distributional impacts. One policy helps the middle class (the primary recipients of public education), one helps the poor (low-skilled and unemployed), and one helps the wealthy (tax breaks).

Fiscal policy can be targeted toward either the supply or demand-side of the economy. Supply-side policies include all policies targeted toward production in the business sector (e.g. changing incentives for investment). Demand-side policies include all policies targeted toward spending by consumers (e.g. altering employment opportunities or taxes on consumption).

Easy (Expansionary) Fiscal Policy

Increasing government spending or decreasing taxes is used when growth in the economy is “too slow.” That is, the economy is faced with a recession, high levels of unemployment, and slow growth in GDP. Expansionary fiscal policy includes:

- increased government spending
- lower taxes
- a combination of the two

If the budget is balanced, an expansionary fiscal policy will increase the deficit as government spending is increased. Critics of fiscal policy measures argue that this expansion by the government “crowds out” expansion of private firms by competing for investment funds used to finance spending.

Assuming that crowding out effects are minimal, expansionary fiscal policy is effective when the economy needs stimulation. It stimulates spending (of consumers or firms), which in turn stimulates production and reduces unemployment. If it is undertaken when (demand-pull) inflationary pressures are present or when the economy is at full employment, it will overheat the economy and create (increased rates of) inflation. If prices are rising because of (non-labor) cost-push factors and the economy is sluggish (as in our problem), expansionary fiscal policies can expand the economy with little impact on price levels.

Tight (Contractionary) Fiscal Policy

Decreasing government spending or increasing taxes is used when growth in the economy is overheated. That is, contractionary policies are most effective when the economy faces excess demand for workers (by firms) or for goods (by consumers). These pressures underlie inflationary pressures and GDP growth that is “too rapid.” Contractionary fiscal policy includes:

- decreased government spending
- increased taxes
- a combination of the two

If the budget is balanced at the outset, a contractionary fiscal policy would move the government toward a budget surplus. This surplus slows economic growth and production. Contractionary fiscal policy is effective when the economy contains (demandside) inflationary pressures. By decreasing spending (of consumers or firms), production is slowed and the demand for workers decreases. If it is undertaken when the economy is in a recession, it will further reduce economic growth and exacerbate unemployment. If prices are rising because of (non-labor) cost-push factors and the economy is sluggish (as in our problem), contractionary fiscal policies will increase sluggishness of the economy and will have little impact on price levels.

Concept Definitions

The curriculum was designed to teach the following concepts:

Budget Deficit A situation where the flow of expenditures exceeds the flow of income for the federal government.

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A deficit occurs when taxes on income and expenditures are insufficient to meet the payments for goods and services and interest on the national debt. Contrast with *National Debt*.

Consumer Price Index (CPI) A measure of the average price of a fixed “market basket” of consumer goods and services that are commonly bought by households. This statistic is computed monthly by the Bureau of Labor statistics.

Contractionary Policy A decrease in *Aggregate Demand* or *Supply* that is brought about by a decrease in *government spending*, an increase in *taxes*, or a combination of the two (fiscal policy) or a decrease in money supply (*monetary policy*). Contractionary policies are used when the economy is overheating.

Cost-push inflation arises with sustained increases in the cost of production that cause the price of the product to increase.

Crowding Out When the federal government borrows money, the associated rise in *interest rates* decreases planned investment spending by private firms and individuals. As a result, government expenditures are said to “crowd out” those by private firms.

Demand Purchases of a good or service that people are actually able and willing to make, given prices and choices available to them. The “**law of demand**” states that there is a negative (or inverse) relationship between price and quantity demanded. That is, as price increases (decreases) the amount of a good purchased decreases (increases). Consumers’ demand is determined by their tastes, income, and price of other goods. **The demand schedule** is a table showing the quantities of a good that will be purchased at various prices. **The demand curve** is a curve that relates the price of a product and the quantity of the product that individuals are able and willing to purchase. **Aggregate Demand** is the total demand for goods and services in the economy by households (for consumer goods), by firms and government (for investment goods), and by other countries (exports).

Demand-push inflation arises when aggregate *demand* exceeds aggregate *supply* and consumers bid up prices.

Demand-Side Theories Views that emphasize increasing *Aggregate Demand* as a means of maintaining economic stability in the economy. Should the economy be at the downturn of the business cycle, demand-side theorists believe that aggregate demand should be stimulated through *expansionary policies*. Should the economy be overheating, demand-side theorists believe that aggregate demand should be slowed through *contractionary policies*.

Discount Rate The rate of interest at which the *Federal Reserve* lends to the banking system. Short-term *interest rates* are geared to the discount rate through the banking system. If the capital market thinks that changes in the rate are likely to last for some time, long-term rates will also change.

Economic Indicators Statistics about the economy that allow analysis of current economic performance and predictions of future performance.

Expansionary Policy An increase in *Aggregate Demand* or *Supply* brought about by an increase in *government spending*, a decrease in taxes, or a combination of the two (fiscal policy) or an increase in money supply (*monetary policy*). Expansionary policies are used when the economy needs to be stimulated.

Federal Reserve System The central banking system in the United States. The system consists of 12 regional banks and branches under control of the Federal Reserve Board. Although the Governors of the Board are

appointed by the President of the United States, the financial capital of the Reserve banks is owned by the member banks, making the “Fed” an independent agency. The Board effectively acts as a central bank and approves the *discount rate*, and *reserve* ratio, and generally regulates the operation of the banking system. The Federal Open Market Committee, a subcommittee of the Board, effectively has the power to influence money supply through *open market operations*.

Fiscal Policy An attempt to attain certain economic goals, such as achieving full employment and increasing *Gross Domestic Product (GDP)*, by varying the government’s purchases of goods and services and its rate of taxation. The spending authorization and rates of taxation are established by Congress.

Government Spending Payments for goods, services, and interest made by the government. *Fiscal Policy* includes the amount spent for goods and services by the federal government. The *multiplier* effect associated with government spending results from spending by any level of government.

Gross Domestic Product (GDP) The dollar value of all final goods and services produced by resources located in the country during a year.

Inflation An upward movement in the average level of prices. The result is diminished purchasing power of a given sum of money. Inflation is contrasted with **deflation**, which is a downward movement in the average level of prices. **Demand-push inflation** arises when aggregate *demand* exceeds aggregate *supply* and consumers bid up prices. **Cost-push inflation** arises with sustained increases in the cost of production that cause the price of the product to increase.

Interest Rates The price of loanable funds, which is usually expressed as annual percentage and measures the yearly cost of borrowing. The price paid per dollar borrowed per period of time. **Nominal Interest Rates:** The *interest rate* taken at its face value. That is, the interest rate expressed in current dollars and not adjusted for *inflation*. **Real Interest Rates:** The actual return to capital. Because comparing nominal *interest rates* includes a purely monetary component, the value of the rate must be purged of changes in prices to be compared over time. The rate obtained after eliminating the element of price change is the real interest rate.

Monetary Policy An attempt to attain certain economic goals, such as, lowering the rate of unemployment or inflation. This can be done by varying the money supply, interest, and (in some cases) conditions of credit. The Board of Governors of the *Federal Reserve* establishes the policies.

Multiplier The recipients of income will save a portion and spend a portion of it. Of the portion spent, the income generated to the next recipient will be partially saved and partially spent. The result of this continued pattern is that the total increase in aggregate income will, in the end, be several times larger than the increase in the initial income received. That is, it will be some multiple of the increase in initial income. The expression that gives the value of this multiple is the multiplier.

National Debt The total amount of money owed by the federal government to the owners of government securities. It is equal to the sum of the past *budget deficits* (less budget surpluses). Contrast with *Budget Deficit*.

Open Market Operations The buying and selling of federal government securities by the *Federal Reserve* banks.

Opportunity Costs The real sacrifice involved in achieving something. The value of the next best opportunity that is foregone in order to achieve a particular thing.

Reserve Requirements The proportion of deposits that a bank or other depository institution is legally required to hold in cash reserve. The proportion is set by the *Federal Reserve* as a *monetary policy* tool.

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Scarcity A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

Supply The amount of a good or service that firms are prepared to sell at a given price. The firm determines how much of a good to supply using its marginal cost curve. **Industry supply** is the summation of all individual firms' marginal cost curves (in a constant cost industry). The **supply schedule** is a table showing the amount of a product that will be produced at a given price. The **supply curve** relates the quantity of a good supplied by a firm (or market) and each price. The **law of supply** dictates that the curve is upsloping, indicating that more will be produced as the price of the good increases. **Aggregate Supply** is the total amount of goods and services available for consumption and consists of both domestically produced goods and services, and imports.

Supply-Side Theories Views that emphasize increasing *Aggregate Supply* as a means of maintaining economic stability. Should the economy be at the downturn of the business cycle, supply-side theorists believe that aggregate supply should be stimulated through *expansionary policies*. Should the economy be overheating, supply-side theorists believe that aggregate supply should be slowed through *contractionary policies*.

Tax A compulsory transfer of money from individuals, institutions, or groups to the government. The tax may be based on either wealth or income or as a surcharge to prices. Taxation is one of the key elements in *fiscal policy* and a primary means by which a government finances its expenditures.

Tradeoff An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

Unemployment Rate The number of people able and willing to work expressed as a percentage of the labor force. Labor force includes working individuals and unemployed individuals but does not include individuals who do not wish to work (e.g. retirees).

Assessment Tools

Questions from Panel Members

Joe Brezinski — The average middle-class American who has been recently become unemployed.

Background: In contrast to monetarists and supply-siders who want to stimulate economic growth by helping business, Joe focuses on policies that have a direct impact on employment. Thus, Joe advocates policies such as unemployment insurance, government created training programs and employment opportunities, and business incentives for firms to hire American workers. Joe believes that the wealth of corporations does not necessarily filter down to the middle class but merely increases the wealth of those who are already wealthy.

Points to be made:

- Wouldn't easing interest rates to allow firms to borrow more just line the pockets of wealthy corporate executives by increasing their profits? I've lost my job and they are pocketing excess profits. They already make millions a year from the labor of people like me. Why do they need more money?
- Why not give tax breaks to the middle class? We will spend the money and create additional jobs in the process. This will help keep working Americans employed.
- Why not help out the unemployed with government programs to help us survive— for example increasing unemployment compensation and providing job search/ training/education programs? This will not only give us some money during tough times, but also will help us find new jobs.
- If taxes are cut for business so that employment opportunities can be created from economic growth, what guarantee do we have that the jobs will be in the United States and that business will not merely expand employment overseas?

- e. What about helping unemployed people with government-created jobs? For example, much of the infrastructure of this country—roads, bridges, levees, etc.—needs to be repaired or upgraded.

Angela Soracco — The Silver Panthers of America President who wants to maintain the purchasing power of elderly people’s assets.

Background: Living on a fixed income from pension plans and assets (e.g. equity in a house), the people represented by the Silver Panthers live in fear of high rates of inflation, which decreases their spending power. Because the income from pensions (for example) does not increase as rapidly as prices, their monthly income does not go as far when prices are rapidly rising. As the value of assets erodes, the equity in their house is not enough for them to sell their home and buy/rent another house as the price of new housing escalates with increased prices. Finally, most retired people rely on Social Security benefits, which are indexed to inflation, as a primary source of steady income and lobby heavily for the government to maintain these benefits.

Points to be made:

- a. Wouldn’t easing interest and borrowing rates for firms just grease the pockets of wealthy corporate executives by increasing their profits? I’ve worked hard all of my life and it’s not fair to see the businesses pocketing excess profits. They already make millions a year and simply pocket the money and not spend it. I need money to live on and my spending will stimulate the economy and create jobs for local merchants.
- b. Aren’t rising prices the major concern in our country? It’s getting so that we can’t afford to buy food at the grocery store or proper health care. Also, young people won’t be able to afford the American dream of owning their own home if we don’t contain price increases.
- c. You can’t cut our Social Security benefits. We worked hard all those years and contributed to Social Security instead of saving money for retirement in a bank. It’s unfair to cut the benefits to which we are entitled.
- d. Why should the government undertake long-term solutions to the economic crisis? Keynes said “In the long run we are all dead” and many of us (the unemployed and elderly poor) will not survive unless short-term solutions are undertaken.
- e. We must maintain the Social Security system. Maybe young people don’t want to pay for their elderly relatives, but we paid for our parents’ generation (note: Social Security is a pay-as-you go system) and the children of today’s young people will take care of them. That’s how it’s structured.

William M. Jorgenson—CEO of Henry J. Car Corporation—who wants to stimulate economic growth by investing in business.

Background: As a representative of corporate America, Mr. Jorgenson wants economic growth stimulated through the growth of business. This means that, in response to Keynesians who advocate policies that increase aggregate demand through increasing the spending capabilities of Americans, he believes that “what’s good for Henry J. Car is good for the USA”. By investing in business, the government is ensuring long-run economic growth. This growth will “trickle down” to the average worker because, as business expands, employment will increase and, as business invests, wages will increase because workers will become more productive.

Points to be made:

- a. Wouldn’t providing people with alternatives to work—e.g. unemployment compensation, government guaranteed jobs, prolonged education—create a society of individuals who “live off of the government” instead of individuals who work? By allowing the market to function without interference (e.g. work disincentives), business will provide workers with jobs and our country will continue to grow and prosper.
- b. Shouldn’t the government create investment incentives like reducing the capital gains tax so that individuals increasingly invest in business? Shouldn’t the government induce firms to invest in capital with policies like reducing the corporate income tax and easing restrictions on borrowing? In this way, business will prosper and grow and provide jobs for workers.
- c. Why should government spending be increased and/or why should the government be responsible for employment? If there were a demand for services provided by government, the private sector would supply it.

- d. What good is an increase in government borrowing (to increase spending) as an expansionary policy? Such borrowing will have no benefit because it will simply crowd out investment and expansion of private sector firms by increasing interest rates.
- e. Shouldn't the government provide tax breaks to corporations to help stimulate production? Tax breaks would allow us to hire more workers and stimulate economic growth.

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5, “Meets Standards” equals a 3, and “Does Not Meet Standards” equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

The President’s Dilemma: **Rubric for Group Oral Presentation on Economic Policy**

TABLE 7.3:

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Understanding of the Problem (10%) Key Aspects: <ul style="list-style-type: none"> • The economic problem facing the nation • The fiscal and monetary policy tools available to the President 	Describes the problem clearly, accurately and completely in terms of all key aspects Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics	Describes the problem clearly and accurately, in terms of most key aspects Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered significantly and/or facts “made up” to avoid grappling with key aspects of economics	Does not describe the problem clearly and accurately, or omits most or all key aspects Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts “made up” to avoid grappling with key aspects of economics

TABLE 7.3: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
<p>Understanding of Economics (60%)</p> <p><i>Key Points:</i></p> <ul style="list-style-type: none"> • Definition and understanding of the economic problems of unemployment and inflation • The fiscal and monetary policy alternatives • Definition and potential effects of demand-side and supply-side strategies • The final policy option selected and justification of that selection • Why the economic benefits outweigh the costs of the selected policy • Impact of solution on the federal budget 	<p>All key points are clearly, accurately and completely discussed using sound economic thinking and vocabulary</p>	<p>All key points are clearly and accurately discussed while attempting to use accurate economic thinking and vocabulary</p>	<p>The information in the presentation is unclear and/or economic thinking may be incorrect. Any or all key points may be missing or inaccurately discussed</p>
<p>Defense of Presentation (Q &#38; A) (10%)</p>	<p>All members of the group are able to directly answer questions and persuasively justify their decisions in terms of economics</p> <p>Answers to questions use correct, detailed economic thinking and terminology and make powerful, articulate points in defense of the group's proposal</p> <p>The drawbacks of the plan are acknowledged and directed to the panel members who may be negatively affected by it</p>	<p>Most members of the group are able to answer questions and justify their decisions in terms of economics</p> <p>Answers to questions use correct economic thinking and terminology and make clear points in defense of the group's proposal</p> <p>An attempt is made to acknowledge the drawbacks of the plan to the panel members who may be negatively affected by it</p>	<p>Only one or no member of the group is able to correctly answer questions or justify decisions in terms of economics</p> <p>Answers to questions use incorrect economic thinking and terminology and/or include inconsistent or confusing points</p> <p>No attempt is made to justify the drawbacks of the plan to the panel members who may be negatively affected by it</p>

TABLE 7.3: (continued)

Component and the Recommended Value	Exceeds Standards (score 4-5)	Meets Standards (score 3)	Does Not Meet Standards (score 1-2)
Visuals Aids for Presentation (10%)	<p>Answers to questions may bring new, relevant information to light; answers do not simply repeat the same information over again</p> <p>No information used in an answer is assumed or fictionalized; if necessary an answer may be, “I don’t know” and the need for further study is acknowledged</p> <p>Visual aids use accurate information and enhance the presentation by addressing key economic concepts</p> <p>Layout, color, design elements, headings, and text are carefully done and professional-looking; all information is clearly readable and understandable</p>	<p>Answers to questions may bring new, relevant information to light; some answers may simply repeat the same information over again</p> <p>No significant information used in an answer is assumed or fictionalized</p> <p>Visual aids use accurate information and support the presentation by addressing key economic concepts</p> <p>Layout, color, graphic elements, headings, and text show some care was taken; significant information is for the most part clearly readable and understandable</p>	<p>Answers to questions do not bring new information to light and answers simply repeat the same information over again</p> <p>Some significant information used in an answer may be assumed or fictionalized</p> <p>Visual aids have incorrect information and/or distract from the presentation, and/or do not address key economic concepts</p> <p>Layout, color, graphic elements, headings, and text show little evidence that care was taken; significant information is unclear or not understandable</p>
Oral Presentation Skills (10%)	<p>Stays within the 5 – 8 minute time limit and is not redundant, wordy, nor too brief in any aspect</p> <p>All group members participate substantively and roughly equally</p> <p>Presentation is clearly organized and flows well with effective transitions; it is not rushed or drawn-out</p> <p>Presentation is professional in style; it features appropriate dress, posture and gestures; a clear, strong, expressive voice; frequent eye contact; awareness of the audience</p>	<p>Stays within the 5 – 8 minute time limit; may be a bit too brief or too lengthy in some aspects; may be somewhat wordy or repetitive</p> <p>All group members participate substantively</p> <p>Presentation is organized; some parts may be somewhat unclear, too brief or too lengthy</p> <p>Presentation is mature in style and features appropriate dress, posture and gestures; a clear voice; some eye contact; some awareness of the audience</p>	<p>Does not fit within the 5 – 8 min . time limit</p> <p>Only one group member participates substantively</p> <p>Presentation lacks organization</p> <p>Presentation style is unprofessional and/or immature; does not feature appropriate dress, posture and gestures; a clear, strong, expressive voice; frequent eye contact; awareness of the audience</p>

Name _____

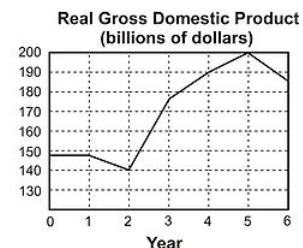
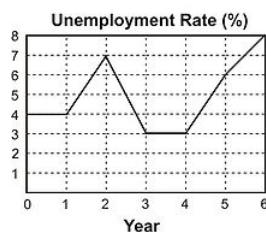
PLEASE BUBBLE IN YOUR ANSWERS COMPLETELY—LIKE THIS "Bold"

1. Consumer spending is most likely to fall when:
 - a. unemployment increases
 - b. the population increases
 - c. interest rates drop
 - d. taxes are reduced
2. Over a 10 year period, the purchasing power of a typical family has risen faster than inflation. This implies:
 - a. prices have risen faster than demand
 - b. taxes have increased more than prices
 - c. both prices and wages have increased
 - d. wages have increased more than prices
3. The major purpose of calculating GDP is to:
 - a. measure the level of economic activity
 - b. prevent instability or changes in the CPI
 - c. improve the standard of living
 - d. measure transfer payments
4. The Federal Reserve system plays an important role in:
 - a. setting fiscal policy
 - b. setting monetary policy
 - c. calculating the federal debt
 - d. deciding tax rates
5. Which of the following indicates a healthy economy?
 - a. unemployment and inflation are high
 - b. unemployment is high and inflation is low
 - c. unemployment is low and inflation is high
 - d. unemployment and inflation are low
6. Which of the following might increase business activity during a recession?
 - a. increasing interest rates
 - b. increasing reserve requirements
 - c. decreasing rates of taxation
 - d. decreasing government spending for public goods and services
7. Supply-side economists believe that:
 - a. an increase in aggregate demand will lead to decreased output and employment
 - b. an increase in taxes will increase aggregate demand
 - c. tax cuts and reduced government regulations will lead to increased output and employment
 - d. large deficits and high interest rates are good for the economy
8. The Federal Reserve exercises monetary policy when it:
 - a. influences the money supply
 - b. supervises loan approvals by banks
 - c. regulates currency distribution
 - d. determines which banks can operate
9. Monetary policy affects economic activity by influencing:
 - a. the size of the money supply

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- b. the amount of income that goes into savings rather than consumption
 c. the size of the federal budget deficit
 d. tax rates
10. An increase in the average monthly income of a worker will:
- reduce government revenues
 - increase business capital investment
 - reduce the money supply in an economy
 - increase consumption for normal goods
11. If your annual money income rises by 50% while prices of the things you buy rise by 100% , then your:
- real income has risen
 - real income has fallen
 - money income has fallen
 - money income is not affected
12. In times of recession, demand-side economists would advocate:
- helping corporations stimulate growth by cutting their taxes
 - allow the economy to regulate itself
 - decreasing transfer payments
 - increasing government spending to stimulate the economy
13. Increased taxation is a preferred method of financing government spending when:
- the interest rate is low
 - the interest rate is high
 - the economy is experiencing inflation
 - the economy is experiencing a recession
14. Fiscal policy includes:
- controlling production
 - changing the money supply
 - changing tax rates
 - setting price controls
15. In *The President's Dilemma* the problem faced by the nation is:
- real wages are falling
 - real wages are rising with inflation
 - real wages are rising
 - real wages are rising with GDP

Economic Conditions in Parkland



16. Parkland had both rising unemployment and a high rate of inflation during which period?
- years 1 to 2
 - years 2 to 3
 - years 3 to 4

- d. years 4 to 5
17. If you were President what would be the best year to run for re-election?
- beginning of year 5
 - beginning of year 6
 - beginning of year 2
 - beginning of year 3
18. When commercial banks increase their loans this usually results in:
- an increase in the nation's money supply
 - a decrease in the spending power of consumers and businesses
 - an increase in the government's control over the economy
 - an increase in national debt
19. Who is likely to be most harmed by inflation?
- retirees living on fixed pension payments
 - union workers
 - stockholders
 - people who owe money
20. Elderly people, such as members of the Silver Cougars, are hit especially hard by inflation because:
- prices rise faster than income
 - spending varies from year to year
 - interest rates increase
 - they transfer payments from bank to bank
21. An increase in aggregate demand could result from the government reducing:
- transfer payments
 - federal budget deficits
 - tax rates
 - purchases of goods and services
22. The most important function of the Federal Reserve System is:
- issuing currency
 - controlling the money supply
 - supervising commercial banks
 - lending money to banks
23. A primary implication of Keynesian economics is that:
- the best government is the least government
 - flexible wages and prices ensure full employment
 - monetary policy is far superior to fiscal policy
 - business-cycle instability is best corrected through government policies
24. During periods of high unemployment, the preferred policy of Keynesian economics is:
- expansionary monetary policy
 - expansionary fiscal policy
 - contractionary monetary policy
 - let the business cycle self-correct
25. During periods of high unemployment, the preferred policy of supply-side economists is:
- expansionary monetary policy
 - expansionary fiscal policy
 - contractionary monetary policy

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- d. let the business cycle self-correct
26. In *The President's Dilemma*, inflation was caused by:
- a. high rates of unemployment
 - b. increasing numbers of retired citizens
 - c. the increasing cost of oil
 - d. the demands of unions
27. To decrease unemployment and increase future economic growth, monetary policy should:
- a. lower discount rates, which would encourage business investment
 - b. raise discount rates, which would encourage people to save and invest
 - c. lower levels of personal savings to finance present consumption
 - d. raise levels of personal savings to finance future consumption
28. In *The President's Dilemma*, the president will have the best chance of being re-elected if:
- a. inflation stays the same and GDP goes up
 - b. inflation goes down and GDP goes up
 - c. inflation goes down and GDP stays the same
 - d. both inflation and GDP go up
29. If the Federal Reserve wants to slow down the economy, it will:
- a. lower the reserve requirement
 - b. raise the discount rate
 - c. buy government securities
 - d. refuse to clear checks
30. Which of the following is likely to increase business investment:
- a. a decrease in interest rates
 - b. an increase in taxes
 - c. a decrease in consumer sales
 - d. a decrease in government spending
31. If the price of oil suddenly increases, as it did in *The President's Dilemma*, what is likely to happen?
- a. demand-pull inflation
 - b. cost-push inflation
 - c. demand-pull deflation
 - d. cost-push deflation

Test for *The President's Dilemma*

Teacher's Answer Key

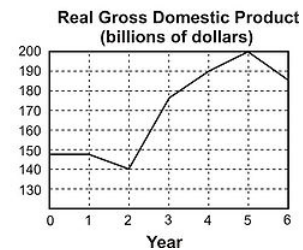
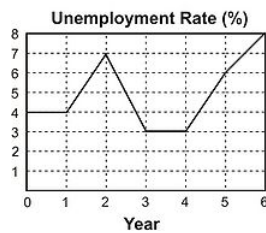
1. Consumer spending is most likely to fall when:
 - a. **unemployment increases**
 - b. the population increases
 - c. interest rates drop
 - d. taxes are reduced
2. Over a 10 year period, the purchasing power of a typical family has risen faster than inflation. This implies:
 - a. prices have risen faster than demand
 - b. taxes have increased more than prices
 - c. both prices and wages have increased
 - d. **wages have increased more than prices**
3. The major purpose of calculating GDP is to:

- a. **measure the level of economic activity**
 - b. prevent instability or changes in the CPI
 - c. improve the standard of living
 - d. measure transfer payments
4. The Federal Reserve system plays an important role in:
- a. setting fiscal policy
 - b. **setting monetary policy**
 - c. calculating the federal debt
 - d. deciding tax rates
5. Which of the following indicates a healthy economy?
- a. unemployment and inflation are high
 - b. unemployment is high and inflation is low
 - c. unemployment is low and inflation is high
 - d. **unemployment and inflation are low**
6. Which of the following might increase business activity during a recession?
- a. increasing interest rates
 - b. increasing reserve requirements
 - c. **decreasing rates of taxation**
 - d. decreasing government spending for public goods and services
7. Supply-side economists believe that:
- a. an increase in aggregate demand will lead to decreased output and employment
 - b. an increase in taxes will increase aggregate demand
 - c. **tax cuts and reduced government regulations will lead to increased output and employment**
 - d. large deficits and high interest rates are good for the economy
8. The Federal Reserve exercises monetary policy when it:
- a. **influences the money supply**
 - b. supervises loan approvals by banks
 - c. regulates currency distribution
 - d. determines which banks can operate
9. Monetary policy affects economic activity by influencing:
- a. **the size of the money supply**
 - b. the amount of income that goes into savings rather than consumption
 - c. the size of the federal budget deficit
 - d. tax rates
10. An increase in the average monthly income of a worker will:
- a. reduce government revenues
 - b. increase business capital investment
 - c. reduce the money supply in an economy
 - d. **increase consumption for normal goods**
11. If your annual money income rises by 50% while prices of the things you buy rise by 100% , then your:
- a. real income has risen
 - b. **real income has fallen**
 - c. money income has fallen
 - d. money income is not affected
12. In times of recession, demand-side economists would advocate:

7.1. THE PRESIDENT'S DILEMMA

- a. helping corporations stimulate growth by cutting their taxes
 - b. allow the economy to regulate itself
 - c. decreasing transfer payments
 - d. **increasing government spending to stimulate the economy**
13. Increased taxation is a preferred method of financing government spending when:
- a. the interest rate is low
 - b. the interest rate is high
 - c. **the economy is experiencing inflation**
 - d. the economy is experiencing a recession
14. Fiscal policy includes:
- a. controlling production
 - b. changing the money supply
 - c. **changing tax rates**
 - d. setting price controls
15. In *The President's Dilemma* the problem faced by the nation is:
- a. **real wages are falling**
 - b. real wages are rising with inflation
 - c. real wages are rising
 - d. real wages are rising with GDP

Economic Conditions in Parkland



16. Parkland had both rising unemployment and a high rate of inflation during which period?
- a. years 1 to 2
 - b. years 2 to 3
 - c. years 3 to 4
 - d. **years 4 to 5**
17. If you were President what would be the best year to run for re-election?
- a. beginning of year 5
 - b. beginning of year 6
 - c. beginning of year 2
 - d. **beginning of year 3**
18. When commercial banks increase their loans this usually results in:
- a. **an increase in the nation's money supply**
 - b. a decrease in the spending power of consumers and businesses
 - c. an increase in the government's control over the economy
 - d. an increase in national debt
19. Who is likely to be most harmed by inflation?
- a. **retirees living on fixed pension payments**
 - b. union workers

- c. stockholders
 - d. people who owe money
20. Elderly people, such as members of the Silver Cougars, are hit especially hard by inflation because:
- a. **prices rise faster than income**
 - b. spending varies from year to year
 - c. interest rates increase
 - d. they transfer payments from bank to bank
21. An increase in aggregate demand could result from the government reducing:
- a. transfer payments
 - b. federal budget deficits
 - c. **tax rates**
 - d. purchases of goods and services
22. The most important function of the Federal Reserve System is:
- a. issuing currency
 - b. **controlling the money supply**
 - c. supervising commercial banks
 - d. lending money to banks
23. A primary implication of Keynesian economics is that:
- a. the best government is the least government
 - b. flexible wages and prices ensure full employment
 - c. monetary policy is far superior to fiscal policy
 - d. **business-cycle instability is best corrected through government policies**
24. During periods of high unemployment, the preferred policy of Keynesian economics is:
- a. expansionary monetary policy
 - b. **expansionary fiscal policy**
 - c. contractionary monetary policy
 - d. let the business cycle self-correct
25. During periods of high unemployment, the preferred policy of supply-side economists is:
- a. **expansionary monetary policy**
 - b. expansionary fiscal policy
 - c. contractionary monetary policy
 - d. let the business cycle self-correct
26. In *The President's Dilemma*, inflation was caused by:
- a. high rates of unemployment
 - b. increasing numbers of retired citizens
 - c. **the increasing cost of oil**
 - d. the demands of unions
27. To decrease unemployment and increase future economic growth, monetary policy should:
- a. **lower discount rates, which would encourage business investment**
 - b. raise discount rates, which would encourage people to save and invest
 - c. lower levels of personal savings to finance present consumption
 - d. raise levels of personal savings to finance future consumption
28. In *The President's Dilemma*, the president will have the best chance of being re-elected if:
- a. inflation stays the same and GDP goes up
 - b. **inflation goes down and GDP goes up**

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- c. inflation goes down and GDP stays the same
 - d. both inflation and GDP go up
29. If the Federal Reserve wants to slow down the economy, it will:
- a. lower the reserve requirement
 - b. **raise the discount rate**
 - c. buy government securities
 - d. refuse to clear checks
30. Which of the following is likely to increase business investment:
- a. **a decrease in interest rates**
 - b. an increase in taxes
 - c. a decrease in consumer sales
 - d. a decrease in government spending
31. If the price of oil suddenly increases, as it did in *The President's Dilemma*, what is likely to happen?
- a. demand-pull inflation
 - b. **cost-push inflation**
 - c. demand-pull deflation
 - d. cost-push deflation

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision

Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

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CHAPTER **8** The High School Food Court

CHAPTER OUTLINE

8.1 THE HIGH SCHOOL FOOD COURT

8.1 The High School Food Court



Unit Overview

Time Required

5-6 hours of class time

Project Scenario

In a market economy, consumers and producers allocate resources according to the laws of demand and supply. Consumers make decisions about what goods and services they are willing and able to purchase based on price and taste. Producers set prices based on their costs, expected revenue and profit. However, sometimes other, non-economic factors influence what is produced and for whom goods are produced. To explore how economic and non-economic factors might interact, students are presented with the following problem-solving scenario in this project:

Oak Grove High School is constructing a new food court on its campus. The school board has asked the student council to recommend which restaurants should be awarded contracts to serve food to students. The student council will be given 20% of the profits from the restaurants to fund its activities. The student council first must decide which restaurants will earn the most profit, balancing their potential funding against student demand for the various entrees to be offered. Complications arise when the school principal forwards voice mail messages from interest groups in the school community who advocate for certain restaurants. Since the school board members also hold varying views about which restaurants are appropriate, students must present convincing arguments based on both economics and political considerations.

Concepts to be Learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts.

- **Costs (of Production)**
- **Demand**
- **Demand Schedule**
- **Fixed Costs**
- **Opportunity Costs**
- **Profit**
- **Scarcity**
- **Total Cost**

- **Total Revenue**
- **Tradeoff**
- **Variable Costs**

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- **Demand Curve**
- **Elasticity**
- **Law of Demand**

Placement in Curriculum

When **The High School Food Court** is taught depends on the course in which it is used, and on the teacher's goals. In a typical high school economics course, BIE recommends using this unit mainly to teach students about the PBL methodology, before moving on to the "Essential PBE Units" described below. Although **The High School Food Court** has been a popular, crowdpleasing *PBE* unit, it does not thoroughly teach micro- or macro-economic concepts in depth, as the Essential PBE Units do. Along with the 50 – minute activity "Make More Money?" also available from BIE, **The High School Food Court** can show students how PBE projects are launched, how the inquiry is framed with a "Know/Need to Know" list and a Driving Question, and how to think and learn in a PBL environment. **The High School Food Court** may also be used in a course focusing on business economics, since the unit teaches students about fixed and variable costs, revenue, and profit.

Sequence and Key Content of PBE Units

Essential Units:

- Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- The Invisible Hand** – free markets and supply incentives
- Monopoly's Might** – competitive markets and supply/demand forces within them
- The Greater Good** – comparative advantage and free trade
- The President's Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)

NCEE Content Standards Addressed

The High School Food Court addresses the following *Voluntary National Content Standards in Economics* codified by The National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standard.

TABLE 8.1:

Standard #	Economic Concept
1	Scarcity
2	Opportunity Cost
3	Market Systems (allocation of goods and services)
4	Economic Incentives

Project Based Learning and Project Based Teaching

Definition of PBL

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”
- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

Components of *Project Based Economics* Units

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”

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- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The **Driving Question** is written in a way that focuses students on the exact problem they need to resolve. The Driving Question is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class' unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are *not* economic terms — may also be defined on the spot, if necessary for understanding.

NOTE: The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CDROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity.

In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- **Notes to the Teacher:** At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
 - Arrange for peers to check each others’ understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide

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for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day's instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer's if they have swapped and read each other's logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
- Talking with certain students or groups to address their misconceptions and misunderstandings
- Giving additional textbook reading assignments, and/or directing students to online resources and explanations
- Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Maximizing the Effectiveness of Project Based Teaching

- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based

Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE*

unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.

- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching The High School Food Court

Sequence of the Unit

Like the other BIE *Project Based Economics units*, students complete **The High School Food Court** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them.

The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible — at least during the first several times **The High School Food Court** is taught. The underlined phrases are cross-referenced and discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

Launching the Project

1. Students receive Entry Document, the **memo from the principal**, and discuss it as a whole class.

Framing the Inquiry

2. Students develop **initial “know” list** with the teacher (whole-class discussion).

3. Students develop **initial Driving Question** with the teacher (whole-class discussion).
4. Students develop **initial “need to know” list** with the teacher (whole-class discussion).

Problem-Solving and Learning Activities

5. Students form small groups, receive **list of restaurant applicants** and discuss the pros and cons of each restaurant (in small groups).
6. Students receive **Table 1, Demand for Entrees**, and review it with the teacher (whole-class discussion).
7. Teacher provides **clarifying lesson # 1** on *demand and total revenue*.
8. Students individually write **first Project Log entry**.
9. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
10. Students receive **Table 2, Total Revenue**, and review it with the teacher (whole-class discussion). OPTIONAL: Students complete Table 2 by performing calculations.
11. Students receive **Table 3, Cost Data**, and review them with the teacher (whole-class discussion).
12. Students receive **Table 4, Daily Costs**, and review them with the teacher (whole-class discussion). OPTIONAL: Students complete blank Table 4 by performing calculations.
13. Teacher provides **clarifying lesson # 2** on *costs*.
14. Students individually write **second Project Log entry**.
15. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
16. Students receive **Table 5, Daily Profits**, and review it with the teacher (whole-class discussion). OPTIONAL: Students complete blank Table 5 by performing calculations.
17. Teacher provides **clarifying lesson # 3** on *profit*.
18. Students individually write **third Project Log entry**.
19. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
20. Students **revise know/need to know list** with the teacher (whole-class discussion).
21. Students **begin making restaurant choices** (in small groups).
22. Students receive **voice mail messages** from the principal, and discuss them as a whole class.
23. Students receive **second memo from the principal**, and discuss it as a whole class.
24. Students **finalize the Driving Question** (whole-class discussion).
25. Students **finalize know/need to know list** (whole-class discussion).
26. Teacher **shares supplied rubric with students** to guide their work.

Presentation, Assessment, and Debrief

27. Students decide upon recommendation and plan presentation (in small groups).
28. Students present recommendations to school board (in small groups).
29. Teacher uses supplied rubric to assess presentations.
30. Teacher conducts debrief to clarify and consolidate students’ understanding of key economic concepts (as necessary).
31. Teacher manages student reflection on the 21st century skills practiced, and the process of learning in PBL.
32. Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

0. **Teacher prepares for successful project implementation.**

There are a number of issues that must be considered before embarking on a project with students. These include:

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- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance?
- Do all students have the basic skills (i.e. non-economics-content, such as reading, working in groups, etc). they need to tackle the project? If not, is it necessary to pre-teach some of these skills, establish student mentor relationships, or deal with these challenges in other ways?
- How will student groups be formed?
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/minilecture materials are ready — or at least underway.

IMPORTANT NOTE ABOUT AUDIO/VISUAL MATERIALS: This unit features voicemail messages as part of the scenario. You may order a CD/DVD containing this recording at www.bie.org, or download it as an audio file. As an acceptable alternative, you and/or students may simply do a “dramatic reading” of the voicemail messages using the transcript provided in *Section IV, Student Materials*.

IMPORTANT NOTE ABOUT GUEST PANEL MEMBERS: If you wish to include other adults as members of the “school board” panel hearing student presentations near the end of the unit, be sure to **contact these guests well in advance**. Let them know the location, day and time presentations will be held. Prepare them for playing their role by providing the appropriate set of “School Board Member Questions” found in Section V, *Teacher Materials*. You may also want to give them key handouts from the unit, such as the Entry Document, *Restaurant Bidders* list, Table 1 *Demand for Entrees*, and Table 5 *Daily Profit*.

Launching the Project

1. **Students receive Entry Document, the memo from the principal, and discuss it as a whole class.**

The memo from the principal may be found in Section IV, *Student Materials*.

Have one or more students read aloud the Entry Document while the whole class focuses on it. The memo can be projected so it can be read by the whole class. Alternatively, copies of the letter can be duplicated and handed out to students.

Potential Hurdle: As this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of memo:

The memo from the high school principal tells the student council members they have been asked by the school board to choose the five restaurants for the food court in the new student center. The student council’s entire operating budget will come from 20% of the profits generated by the restaurants. The principal notes the parameters for the selection of restaurants and explains details regarding the students’ oral presentation, with visual aids, to the school board. He reminds the council that they should use economic arguments and also must represent the interests of all students in the school.

Framing the Inquiry

2. **Students develop the initial “know” list with the teacher (whole-class discussion).**

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a

computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure to *only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Example of Initial Know List

What do we know?

- the school board has asked the student council to pick restaurants for a new food court
- twelve restaurants applied for five spaces
- Dr. Campbell is principal of Oak Grove High School
- the student council gets 20% of the profits from the restaurants
- if the restaurants we choose don't make enough profits, the student council will have to cancel activities or charge fees
- we need to make a five minute presentation with posters and graphs, and answer questions from the board
- we must take into account the interests of all of the student body
- the three voting members of the school board must all agree on the proposal
- the president of the board has an economics degree
- our decision must be "grounded in sound economic thinking"
- there are no set up fees for restaurants
- restaurants have the same space allocation
- each restaurant says it can serve food quickly enough
- the campus is closed, students must eat on campus
- selection of restaurants is for four years
- the school district has some information we'll get soon

3. Students develop the initial Driving Question with the teacher (whole-class discussion).

After students have discussed the memo from the principal, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion.

A Driving Question is a succinct declaration of the general problem students are to solve. In PBE, it takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial Question may look something like:

How can we, as **the student council**, choose **which five restaurants should be in the food court**, so that **we can meet the needs of the student body and make enough money from the profits to pay for student activities?**

At this point, it is fine to keep the Driving Question ill-defined. It is not necessary for the Driving Question to contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the scenario unfold.

4. Students develop the initial need to know list with the teacher (whole-class discussion).

The next step in the problem-solving process is to coach students to identify information they need to know in order to answer the Driving Question. Again, guiding students to pay close attention to all parts of the memo, create a "What Do We Need to Know?" list. If students are missing a key piece of information about the scenario, the

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content, or their task, ask questions to elicit items for the list. This is critical because everything students are taught in the unit must spring from this list.

At this point in the problem-solving process, students will probably list things that they actually do *not* need to know. Allow students to do so. The class will return to the know/need to know list again later, having learned more about what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of Project Based Learning is to distinguish what information is and is not necessary to successfully answer the Driving Question. As much as possible, encourage students to identify irrelevant information on their own.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Need to Know List

What do we need to know?

- What food do students want?
- Which restaurants make a profit and how much?
- What foods do the restaurants have and how much will it cost?
- What kind of posters and graphs do we need to make?
- What is “sound economic thinking”?
- How much money does the student council need?
- How big is the school?
- What are student demographics?
- Where are students getting food now?

Potential Hurdle: If students ask about how food was or is to be provided before the food court is built, you can tell them to assume it is either a cafeteria or temporary “lunch truck” vendors.

Problem-Solving and Learning Activities

5. **Students form small groups, receive list of restaurant applicants and discuss the pros and cons of each restaurant (in small groups).**

The restaurant applicants list may be found in Section IV, Student Materials.

Form students into small groups of four to five, each of which is a student council “task force.”

Distribute copies of the restaurant applicants list, either one to each student or one or two to each group. Have students read over and discuss the list in their groups, noting which restaurants look appealing and what further questions they have. After students have had some time to discuss the list, review the restaurants as a whole class and have student groups share their questions. Some may be answered right away (e.g., “What is a crepe?”) and others may be added to the “Need to Know” list (e.g., “How many students are in the Consumer Sciences classes?”).

6. **Students receive Table 1, Demand for Entrees, and review it with the teacher (whole-class discussion).**

Table 1, Demand for Entrees may be found in Section IV, Student Materials.

Distribute copies of Table 1 to students and explain what it shows. You may wish to use this handout in conjunction with the clarifying lesson that follows this step.

Table 1 is the *demand schedule* for the entrée each restaurant has decided to offer. The price is located in the first column of the table and the amount that students will purchase at each restaurant at each price is located in the remaining columns. Students should note that demand varies by how much the Oak Grove students like a particular item, which is what economists would call consumer “taste” for various foods. You can illustrate this point by selecting a price and comparing levels of demand. For example, at a price of 50 cents (\$0.50), only 10 students will

buy borscht but 500 kids will eat chicken. You should also note that the law of demand holds. For each restaurant, as price falls, more will be purchased. Numbers in Table 1 will be used to compute total revenue in Table 2 and to determine the quantity sold (at each price) in Table 4.

Potential Hurdle: Students sometimes do not see that “will be purchased” and “quantity demanded” are equivalent phrases. That is, the demand curve, which tells how much of a good will be purchased at each price, reflects the *quantity demanded* at each price. Potential confusion may arise unless students fully understand that quantity demanded means ability and willingness to purchase a good at a given price. Of course, this phrasing is economic jargon. Students might simply define quantity demanded as how much people will buy at some price. Of course, once they understand the concept in lay terms, it is best to help them see that the economics jargon is saying the same thing.

7. Teacher provides clarifying lesson # 1 on demand and total revenue.

Note that this lesson will further help answer students’ questions on the “Need to Know” list about what the students want and will buy at the food court.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: This lesson is designed to provide students with the economics behind the numbers they are about to compute in Table 2. It should help them understand the concepts of quantity demanded and demand. These concepts are a cornerstone of economics (the demand curve) and are essential for understanding firms’ decision making. Firms will set price where they can maximize profit (total revenue minus total cost).

8. Students individually write first Project Log entry, answering the following questions:

Why does Bennie’s sell more hamburgers when they are priced at \$1.00 than when they are priced at \$5.00 ? Why can Bennie’s sell more hamburgers for \$1.00 than Sally’s can sell salads for the same price, and how does this affect the total revenue brought in by each restaurant? What are some of the things that determine how many entrees students will buy from each restaurant?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

9. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

See Section II, *Project Based Learning and Project Based Teaching*, in “Formative Assessments...” for tips on reviewing Project Logs.

Economics Content Note: The Project Log entries should be reviewed to determine if students understand that demand is the ability and willingness to pay for a good. They should see that individuals respond to price. As price decreases, the quantity bought increases (law of demand). They should also be able to see that demand differs between the restaurants because of things like tastes and preferences. Students should understand that things like the income of the students and the number of students will determine demand (how much is sold at any price). As a result, they do not need to know how many students are in the high school or how wealthy it is to select restaurants. All they need to know along these lines is the demand schedule. Students should be at the point where they will quickly be able to see that the level of demand (i.e., quantity sold) determines the firm’s total revenue at each price. This will be shown in the next resource they receive.

10. Students receive Table 2, Total Revenue, and review it with the teacher (wholeclass discussion). OPTIONAL: Students complete Table 2 by performing calculations.

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Blank and completed versions of Table 2, *Total Revenue*, may be found in Section IV, *Student Materials*.

Distribute copies of the blank Table 2 if you want students to practice their arithmetic (or Excel) skills, have them complete the entire table on their own. Students should be walked through the computations to reinforce the idea that total revenue is obtained from the demand schedule (Table 1, *Demand for Entrees*) and is computed by multiplying the price times the number sold at that price. Once students understand this concept, you may provide students with the completed Table 2 to save time.

To compute daily Total Revenue using the information in Table 1, students multiply price times the number sold at each price for each restaurant, using this formula:

$$\text{Total Revenue} = \text{Price} \times \text{Quantity (sold)}.$$

For example, the total revenue at Taco Villa for 35 tacos at a price of \$3.00 is \$105 .

$$\$105 = 35 \times 3$$

Potential Hurdle: Some students may find the task of completing the entire *Total Revenue Table* to be challenging, or too time-consuming. (The later step of completing Tables 4 and 5 also will require a lot of calculations). Students may need to be given an example of how to do the calculations — the note at the bottom of each table explains how to do it. To make the task more efficient, you may divide up the work among the whole class or have students divide the task in their small groups. Alternatively, you may have students do the calculations for one or two restaurants, then provide them with the completed table.

Remind students that the student council will be getting 20% of the *profits* of each restaurant selected, not the total revenue. Total revenue is only one part of profit. The Oak Grove School District provided students with the data so they could compute total revenue and to help them understand the economics behind their decision about which restaurants to recommend to the school board. Ideally, students should now be asking for information about costs, so they can determine how much profit each restaurant will make.

11. Students receive Table 3, *Cost Data*, and review it with the teacher (whole-class discussion).

Table 3 may be found in Section IV, *Student Materials*.

Explain to students that the data in Table 3 has been collected by the Oak Grove School District to help the student council members understand the economics behind their decision about which restaurants to recommend to the school board. Walk students through the table, pointing out what it shows and how it is organized. Table 3 shows the costs associated with making each entree for each restaurant. It illustrates the concepts of *fixed costs* and *variable costs*. Numbers in this table will be used to compute total costs (Table 4).

- **Fixed costs** are shown for each restaurant in the section labeled “stall and equipment rental.” These costs do not vary with output (how much of an entrée is made). They are the same for all restaurants except the Consumer Sciences Kitchen, which receives funding from the U.S. Department of Agriculture to cover stall and equipment rental. Table 3 should be used to show how costs might differ among firms.
- **Variable costs** are shown for each restaurant in the section labeled “labor and ingredient costs.” These costs vary with output (how much of an entrée is made). The more entrees made the greater are production costs. They also differ for each firm. Labor costs depend upon the quality of the labor (e.g., the “nationally known chefs” at Fleur de Lys cost more than students in the Wildcat’s Den) and the amount of time spent in preparation (e.g., preparing the salad bar at Sally’s is more time intensive than opening canned vegetables and potatoes at the Consumer Sciences Kitchen). Ingredient costs vary with quality.

- Table 3 should be used to illustrate the relatively wide variation in costs. For example, the Consumer Sciences Kitchen can operate at very low costs (and hence offer lower prices) while Fleur de Lys has extremely high costs and, as a result, only will operate if sufficient demand exists at relatively high prices (i.e., enough students will buy the crepes to cover their costs).

12. Students receive Table 4, Daily Costs, and review it with the teacher (whole-class discussion). OPTIONAL: Students complete Table 4 by performing calculations.

Blank and Completed versions of Table 4 may be found in Section IV, *Student Materials*.

Distribute copies of the blank Table 4 if you want students to practice their arithmetic (or Excel) skills, have them complete the entire table on their own. Students should be walked through the computations to reinforce the idea that total cost is obtained from the cost schedule (Table 3, *Cost Data*) and is computed by multiplying the variable cost times the number sold at that price (from Table 1) and adding that to fixed costs. Help students see that knowing about how much it costs a restaurant to produce an entrée is essential if they are to know how much profit it makes. That is, make sure they understand the economics behind the arithmetic. Once students understand these concepts, you may provide students with the completed Table 4 to save time).

NOTE: Clarifying lesson #2 on *costs and total costs* that follows in Step 13 may be given at the same time as this Step.

Explain to students that the data in Table 4 also has been collected by the Oak Grove School District to help the student council members understand the economics behind their decision about which restaurants to recommend to the school board. Walk students through the table, so students see that how it shows what it costs each restaurant each day to produce its entrée.

Show students how to compute the total costs borne by the restaurants at each price using the formula below:

$$\text{Total Cost} = \text{Stall Rental} + \text{Equipment Rental} + (\text{labor cost} \times \text{amount sold}) + (\text{ingredient cost} \times \text{amount sold})$$

The stall rental, equipment rental, labor cost, and ingredient costs are obtained from *Table 3, Cost Data* table (Table 3). The amount sold at each price is obtained from *Table 1, Demand for Entrees* table.

For example, the total cost for tacos at a price of \$3 is \$44 .

$$\$44.00 = \$25 + \$5 + (\$.2 \times 35) + (\$.2 \times 35)$$

Once costs are computed at each price for each restaurant, students should recognize that fixed costs (\$30) occur for each restaurant (except the Consumer Sciences Kitchen) even when the restaurant is not selling any food. This is easily illustrated by the fact that restaurants (and people!) must pay rent, even if nothing is sold, because they have a lease.

13. Teacher provides clarifying lesson # 2 on costs and total costs.

Note that this lesson will further help answer students' questions on the "Need to Know" list about the operation of the restaurants applying to the food court. This lesson may be given at the same time as Step 11 above, when students receive and/or complete Tables 3 and 4.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: This lesson is designed to provide students with the economics behind the numbers they see in Tables 3 and Table 4. It helps them firmly understand the concepts of fixed, variable, and total costs.

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14. **Students individually write second Project Log entry, answering the following questions:**

Why might the cost of labor and ingredients be higher for Fleur de Lys than for Taco Villa? Why are stall and equipment rental called “fixed costs” while labor and ingredients are called “variable costs”? How do these costs affect how much it costs to produce an entrée?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

15. **Teacher reviews individual Project Log entries to assess understanding of economic concepts.**

See Section II, *Project Based Learning and Project Based Teaching*, in “Formative Assessments...” for tips on reviewing Project Logs.

Economics Content Note: The Project Log entries should be reviewed to determine if students can distinguish between fixed and variable costs and that they understand how together fixed and variable costs determine total cost. Students should also be able to understand that the costs presented in Table 3 are per unit costs, which is only one component of the total cost to a restaurant of producing the food sold.

16. **Students receive Table 5, Daily Profits, and review it with the teacher (wholeclass discussion). **OPTIONAL:** Students complete Table 5 by performing calculations.**

A blank and completed version of Table 5 may be found in Section IV, *Student Materials*.

Distribute copies of the blank Table 5 if you want students to practice their arithmetic (or Excel) skills, have them complete the entire table on their own. Students should be walked through the computations to reinforce the idea that profit is obtained from a firm’s total revenue (Table 2, *Computed Total Revenue*) and total cost (Table 4, *Computed Total Cost*). It is computed by subtracting total cost from total revenue. Negative numbers indicate that a firm is operating at a loss (i.e., it is losing money selling the entrée at that price). Once students understand this concept, you may provide students with the completed Table 5 to save time.

NOTE: Clarifying lesson #3 on *profit* that follows in Step 17 may be given at the same time as this Step, when students receive Table 5.

Explain to students that the data in Table 5, which also has been compiled by the Oak Grove School District, is key to deciding which restaurants to recommend to the school board, for it tells them how much profit restaurants can make. Because the student council receives 20% of the profit as their revenue source for the year, knowing profit is essential information for them in determining which restaurants to choose.

Table 5 shows how much daily profit each restaurant will make at each price. The number in **boldface** on the completed table is especially important, since that is the price at which the restaurant will sell its entrée, because it wants to maximize its profits or minimize losses.

Students compute the daily profit obtained at each price for the restaurants using the formula below:

$$\text{Profit} = \text{Total Revenue} - \text{Total Cost}$$

Total Revenue is obtained from Table 2 and Total Cost is obtained from Table 4. For example, the daily profit for tacos at a price of \$3 is \$61 .

$$\$61 = \$105 - \$44$$

Losses (negative profits) result when costs exceed revenue at a given price.

Once profits are computed at each price for each restaurant, students should recognize that the profit function increases and then decreases. Price is set at the point at which profits are maximized.

Potential Hurdle: Students are likely to ask why a restaurant would apply to operate in the food court if it was going to make nothing — or lose money — on each entrée sold. (This is the case with Bubba’s Steak House, Fleur de Lys, the Borscht Palace, and the Roastery). You could ask students to think of possible reasons. Apart from the unlikely need for a tax write-off, restaurants might operate in the high school food court to advertise or gain name recognition. If students like the food, or have heard about the restaurant, their parents might patronize the restaurant or students might patronize it, perhaps on prom night or after they graduate.

17. Teacher provides clarifying lesson # 3 on profit.

Note that this lesson will further help answer students’ questions on the “Need to Know” list about which restaurants will generate the most money for the student council. This lesson may be given at the same time as Step 15 above, when students receive or complete Table 5.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: This lesson should emphasize that profit arises when total revenue exceeds total cost at the quantity sold. Because firms want to maximize their profit, they will produce the quantity at which total revenue exceeds total costs by the greatest amount.

18. Students individually write third Project Log entry, an answer to the following question:

How does a firm decide how much it will produce?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

19. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

See Section II, *Project Based Learning and Project Based Teaching*, in “Formative Assessments...” for tips on reviewing Project Logs.

Economics Content Note: The Project Log entries should be reviewed to determine if students understand that the firm’s desire for profit will determine how much it will produce. That is, a firm will produce where it can make the most profit.

20. Students revise know/need to know list with the teacher (whole-class discussion).

Return to the know/need to know list and review it with students, checking off items that are now “known” and adding any new questions.

Check the Driving Question to see if it still captures accurately the students’ task.

21. Students begin making restaurant choices (in small groups).

Have students again meet in their student council “task force” groups, now that they have gained information on demand, revenue, and profit. They should review all the materials they have been given, and think about what they have learned about economics. Allow the groups some time to discuss the restaurants, perhaps 15 – 20 minutes, and if you wish, to share their thinking with the whole class.

Potential Hurdle: Some students, or some groups, may not know how to get started or may plunge into making decisions too quickly — or just generally show signs of not using an organized thinking process. If you think it

would be helpful and not overly-directive, coach students to develop a set of criteria to guide their decision. Their presentation to the school board could be made more effective by explaining these criteria, too. For example, students could consider criteria such as profit, price, and appeal to various students.

Students should be coached to see that by selecting restaurants for the food court solely on the basis of profitability (i.e., the five restaurants with the most profit are chosen), they could bring \$22,645.80 for the student council. Be sure they see that reductions from that figure, without regard for last year's budget, represent tradeoffs that must be made.

22. Students receive voice mail messages from the principal, and discuss them as a whole class.

An audio recording of the voice mail messages may be ordered or downloaded at www.bie.org. The transcript of voice mail messages may be found in Section IV, *Student Materials*.

Once students have begun the discussion of potential restaurants operating in the food court, additional economic and political factors are introduced into the scenario and need to be considered in their decision. The principal forwards some voice mail messages from individuals who are lobbying for specific types of restaurants.

Have students listen to the recording of voice mail messages and/or read the transcript provided in this unit. If you do not play the audio recording, have different students read aloud from the transcript, acting as the various characters. Stop the tape after each speaker to discuss what is learned from each "lobbyist." Students could be prompted to listen for information that answers the questions, "What type of restaurant does each person want? How important is this information in deciding who should be allowed to operate in the food court?" Students should hear that:

- **Rita Price** is promoting the Wildcat's Den so that students will be provided with career opportunities (25% of the students will benefit).
- **Edith Cash** is promoting healthy foods and does not like fast food franchises.
- The **Galloping Gourmets** are interested in taste and quality. Money is not an issue for these students and their parents actively contribute to the Booster's Club, which is an important group.
- The **Vital Vegetarians** are interested in the environment, animal rights, and natural foods. They are boycotting Taco Villa and the Hunan Wok because of their environmentally harmful practices.
- **Ms. Loer** is concerned about the price of food in the Food Court. Since the campus is closed, about 25% of the students may have difficulty affording lunches.
- **Mrs. Tanya Stravinsky**, who has donated a lot of money to the school, owns the Borscht Palace and wants to promote the "finer things in life." She suggests that she will consider helping fund the construction of the swimming pool and tennis court.

Economics Content Note: The issues raised in the voice messages are designed to show students the tradeoffs that sometimes exist between economic and noneconomic factors. Making decisions grounded in economics will yield the student council the largest revenue, but it carries the opportunity cost of noneconomic concerns raised in the voice mails. Students can use whatever criteria they wish in selecting restaurants as long as they realize the tradeoffs they are making in their selection and the opportunity costs of their decision.

23. Students receive second memo from the principal, and discuss it as a whole class.

The second memo from the principal may be found in Section IV, *Student Materials*.

Distribute the memo as a handout or display a copy so the whole class can read it. Read the memo aloud and discuss it to be sure everyone understands how it affects the problem to be solved. The principal. This memo describes the members of the school board, plus a non-voting member who is nonetheless an important constituent to the school:

- **Dr. Chris Calderon**, President of the Board of Trustees, is a businessperson with an economics degree and wants high-profit restaurants.

- **John Cash**, husband of PTA President Edith Cash, is concerned about students' health, opportunities to learn job skills, and the needs of low-income students.
- **Alex Muir**, an environmentalist and political liberal, supports the right of vegetarian students to have a non-meat source of food on campus. He is also boycotting Hunan Wok and Taco Villa because of their poor environmental records and concerns about fair labor practices.
- **Mrs. Tanya Stravinsky**, a non-voting, honorary member of the school board and one of the school's major financial benefactors, has a special interest in cooking from her homeland and in gourmet food from around the world.

24. **Students finalize the Driving Question (whole-class discussion).**

Students should write the final version of their Driving Question at this point. The final Driving Question should resemble:

How can we, as **the student council**, make an effective oral presentation **about the restaurants we have selected for the food court**, so that **the school board is convinced we have balanced the needs of all students with the need to maximize our revenue?**

25. **Students finalize know/need to know list (whole-class discussion).**

Return to the know/need to know list at this point and check to see if all important questions have been or can be answered. Coach students to see which items on the list may in fact not be relevant to solving the problem. If any key questions remain on the need to know list, answer them or remind students how they can find answers.

26. **Teacher shares supplied rubric with students to guide their work.**

A rubric for the oral presentation may be found in Section V, *Teacher Materials*, in “Assessment Tools.”

Give a copy of the rubric to each student, or display it on an overhead or computer projector so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their oral presentation skills, while important, are given less weight on the rubric. If you are altering the rubric's point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Presentation, Assessment, and Debrief

27. **Students decide upon recommendation and plan presentation (in small groups).**

Have students meet again in their small groups, and allow enough time for them to discuss and agree upon their final decision, prepare visual aids, and practice the oral presentation. This task may take one or two full class periods, or if possible some of it may be assigned as homework. Provide feedback as needed, by talking with groups during class and reviewing drafts and practice sessions. Remind students that they will need to keep to the five minute time limit, and be sure each member of their group is responsible for part of the presentation and is prepared to answer questions about *any* part of the presentation.

Remind students that they need to be persuasive about the tradeoffs they had to make to fund activities *and* to provide *all* students in the school with food they are willing and able to buy. Coach them to consider the opportunity costs of various solutions that would address the concerns of different interest groups.

28. **Students present recommendations to school board (in small groups).**

For more guidance on managing the presentations, see Section II, *Project Based Learning and Project Based Teaching*, in “Presentation and Critique of Problem Solution.”

8.1. *THE HIGH SCHOOL FOOD COURT*

Have each group make its presentation with visual aids to the school board, with five minute maximum allowed. After the presentation, board members should question students about their decisions and knowledge of economics. Be sure you or someone else with knowledge of economics plays the role of the school board president. To keep the presentations and questions focused, the board members may be limited to two or three questions each. To keep the panel members from straying from economic concepts, scripts for their character are provided in Section V, *Teacher Materials*.

Depending on the size of the class and number of groups, a second day for presentations may be necessary.

29. **Teacher uses supplied rubric to assess presentations.**

The rubric for the presentations may be found in Section V, *Teacher Materials*, in “Assessment Tools.”

As you hear and see the students’ presentations, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

30. **Teacher conducts debrief to clarify and consolidate students’ understanding of key economic concepts (as necessary).**

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations. Although future *Project Based Economics* units will return to some of the same economic ideas and concepts, spend some time after students’ presentations clarifying any concepts that are still unclear.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students’ solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

Economics Content Note: It is important that students see that the economic solution is the one in which the restaurants with the highest profit are selected. Students also need to see that this criterion may leave some students with limited alternatives (e.g., vegetarians can only get salads, and students cannot get work experience without the Wildcat’s Den or Consumer Sciences Kitchen). To choose restaurants that accommodate these other concerns comes at a cost, however. The student council gets less money. In economic terminology, there is an opportunity cost of not choosing the restaurants making the most profit: student council activities must be given up. As a result, tradeoffs exist between student council events and meeting student needs.

Care should also be taken to ensure that students are comfortable with the economic determinants of profit. For example, demand is based on ability and willingness to pay, costs vary across firms, and profit levels could vary with changing student populations.

31. **Teacher manages student reflection on the 21st century skills practiced, and the process of learning in PBL.**

Students should have a chance to discuss the process of learning in PBL, and to reflect on the critical thinking, collaboration, and presentation skills they used in the project. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible “right answers” to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?

32. **Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.**

Teachers inevitably recognize how to make **The High School Food Court** more effective after they have taught it. We encourage you to note these thoughts quickly, so they can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school Economics teachers. We include their advice below.

- The data provided in the tables cannot be changed without a tremendous amount of work. While it is tempting to have students collect their own data on student preferences at their high school, this would produce numbers that might not illustrate the economic concepts that are the focus of this unit.

Extensions to the Unit

Consider the following economics content-related extension:

- Table 1 can be used to graph a demand curve. Teachers can both teach graphing and the law of demand by having students plot the points of price and quantity sold for any of the restaurants.

Student Materials

OAK GROVE CITY HIGH SCHOOL

TO: Student Council

FROM: Dr. Stanley Campbell, Principal

RE: Food court in new student center

As you know, our school board would like the student council to select the restaurants for the food court in our new student center. Twelve local restaurants have applied for the five spaces available. The board has set the following parameters to help you make your decision:

- Each restaurant will be required to give 20% of its profits to the student council. These funds will be the entire annual budget for the council — to pay for student activities, clubs, social events, and whatever else the council may wish to do that costs money. If the restaurants do not generate enough profits, you will have to cancel events or charge fees.

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- b. Your selections will be in effect for four years, according to the contract to be signed by each restaurant.
- c. All restaurants will have the same space allocation. They will not be charged any set-up fees.
- d. Each restaurant guarantees it will be able to serve food quickly enough to accommodate our student population and lunch schedule.

Also keep in mind the following:

- While you are free to use any criteria you wish in making this decision, remember that you represent ALL the students at this school. You need to take into account the needs of our diverse student body — and because we have a closed campus, students must either use the food court or bring a lunch from home.
- The president of the board has an economics degree, so be sure your decision is grounded in sound economic thinking.
- To approve your recommendation, the board will need to reach a consensus decision — all members must agree. Give them convincing reasons as to why the restaurants you have chosen are both profitable and meet the needs of students.

The board will hear your recommendation at their meeting next week, so plan a five-minute oral presentation with posters and graphs. Please note that you will not be allowed to exceed your time limit, and be prepared to answer questions from board members.

The school district has prepared some information about the restaurants to help guide your decision, which you will receive soon.

Board of Trustees Oak Grove School District

Restaurant Applicants for Food Court

The restaurants submitted the following descriptions of themselves in their applications to the school board.

They will serve ONLY the items they have decided to offer:

- a. **Taco Villa:** *Beef tacos.* Taco Villa is a national fast-food franchise well known to students as a place to enjoy a quick, cheap, tasty meal.
- b. **The Wildcat's Den:** *Meat and cheese submarine sandwiches.* This is our school's student-run enterprise, so by purchasing our food at reasonable prices, students will be helping their fellow students learn about running a restaurant. Profits from the Wildcat's Den will NOT go to the Student Council — they will go back to the School-to-Work program and help support additional course offerings.
- c. **Veggie Vittles:** *Vegetarian sandwich.* We base our cooking on the philosophy of eating low on the food chain. Our all-organic menu is limited to whole grains, fruits and vegetables, and no animal products— your good eating habits and environmental sustainability are our major concerns.
- d. **Consumer Sciences Kitchen:** *Meat, potato, and vegetable plate.* To keep our prices low, we work closely with the U.S. Department of Agriculture's County Extension Office and purchase our cans of meat and vegetables and bags of potatoes in bulk. Although our food may not be as "taste engineered" as our fast-food competitors, our nutritionally balanced meals are cheap and meet current FDA guidelines. Our profits from the food court will NOT go to the student council — the money we earn will help fund supplies and activities for students in the Consumer Sciences program, which is needed due to recent state budget cuts.
- e. **Fleur de Lys:** *Crab crepe.* Our nationally acclaimed chef, Pierre "Pepe" LePue, serves traditional Northern French cuisine. Enjoy Pierre's culinary skill at the food court, and add a touch of elegance to your high school experience.
- f. **Bubba's Steak House:** *Beef steak.* Our popular local steak house serves generous portions of prime rib, T-bone and Porter House steaks. Our range-fed beef packs more protein per pound than any other lunch around. When you've been to Bubba's, you've been well fed.
- g. **Sally's Soups and Salads:** *Salad bar.* Healthy, low calorie soups and salads are Sally's specialties. Low fat does not have to be low taste.

- h. **Bennie’s: Hamburgers.** Bennie’s franchises attract customers all across the United States by offering great food at great prices. Bennie’s is known as a popular high school hangout, with a friendly, informal setting.
- i. **Hunan Wok: Lemon chicken and pork chow mein.** We have been serving fast food for over thirty years, and are now seen in food court franchises in shopping malls across the region. Oak Grove students will love the low prices and flavorful choices at the Hunan Wok.
- j. **The Borscht Palace: Soup.** Beets, cabbage, and vinegar in a beef broth never tasted so good. Our borscht won the Cleveland Founders Day Cook Off three years in a row. Eat like a czar at the Borscht Palace.
- k. **The Pasta Place: Spaghetti with meat (ground beef) sauce.** The Pasta Place is a long-time local restaurant offering family-style Italian fare, lots of food, and cheap prices — teens and their families love it.
- l. **The Roastery: Roasted chicken and marinated vegetables with rice.** Gourmet magazines rave about our special spit-roasting cooking techniques using a hickory and apple wood fire. We offer students a tasty meal for the discerning palate.

TABLE 8.2: Demand for Entrees at Oak Grove High School

Restaurant	Taco Villa	Wildcat’s Den	Veggie Vitals	Consumers Sci Kitchen	Fleur de Lys	Bubba’s Steak House	Sally’s soup	Bennie’s hamburgers	Hunan chicken chow mein	Borsch Palace	Pasta Place	Roastery chicken
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	salad	hamburger	chicken chow mein	soup	spaghetti	chicken
Price	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:	Quantity Demanded Daily:
\$10.00	0	0	0	0	1	1	0	0	0	0	0	3
\$9.50	0	0	0	0	2	1	0	0	0	0	0	3
\$9.00	0	0	0	0	3	1	0	0	0	0	0	3
\$8.50	0	0	0	0	4	1	0	0	0	0	0	3
\$8.00	0	0	0	0	5	1	0	0	0	0	0	4
\$7.50	0	0	0	0	6	1	0	0	0	0	0	5
\$7.00	0	0	0	0	7	1	0	0	0	0	0	6
\$6.50	0	0	0	0	8	3	0	0	0	0	0	7
\$6.00	0	0	0	0	9	4	0	0	0	0	0	8
\$5.50	0	0	0	0	10	5	0	3	0	0	0	10
\$5.00	0	0	0	0	11	10	0	10	5	0	3	12
\$4.50	0	0	4	0	13	15	5	25	15	0	7	15
\$4.00	10	0	7	0	15	20	10	40	25	0	25	20
\$3.50	20	5	10	0	18	30	14	55	45	0	35	30
\$3.00	35	10	15	0	25	45	18	70	55	0	50	60
\$2.50	50	20	17	0	30	60	25	100	75	0	80	100
\$2.00	100	37	20	10	55	100	35	150	150	0	100	150
\$1.50	150	63	25	15	70	200	84	188	250	0	140	275
\$1.00	200	75	30	25	80	250	150	225	300	5	200	425
\$0.50	300	100	30	25	120	350	200	350	350	10	250	500

TABLE 8.3: Computed Total Revenue

Restaurant	Taco Villa	Wildcat Den	Veggie Vitals	Consumer Sci Kitchen	Fleur de Lys	Bubba’s Steak House	Sally’s soup & salad	Bennie’s hamburger	Hunan Work chicken chow mein	Borsch Palace soup	Pasta Place spaghetti	Roastery chicken & veggies
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	soup & salad	hamburger	chicken chow mein	soup	spaghetti	chicken & veggies
Price	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:	Total Revenue at Each Price:
\$10.00	0	0	0	0	\$10.00	\$10.00	0	0	0	0	0	\$30.00
\$9.50	0	0	0	0	\$19.00	\$9.50	0	0	0	0	0	\$28.50
\$9.00	0	0	0	0	\$27.00	\$9.00	0	0	0	0	0	\$27.00
\$8.50	0	0	0	0	\$34.00	\$8.50	0	0	0	0	0	\$25.50
\$8.00	0	0	0	0	\$40.00	\$8.00	0	0	0	0	0	\$32.00
\$7.50	0	0	0	0	\$45.00	\$7.50	0	0	0	0	0	\$37.50
\$7.00	0	0	0	0	\$49.00	\$7.00	0	0	0	0	0	\$42.00
\$6.50	0	0	0	0	\$52.00	\$19.50	0	0	0	0	0	\$45.50
\$6.00	0	0	0	0	\$54.00	\$24.00	0	0	0	0	0	\$48.00
\$5.50	0	0	0	0	\$55.00	\$27.50	0	\$16.50	0	0	0	\$55.00
\$5.00	0	0	0	0	\$55.00	\$50.00	0	\$50.00	\$25.00	0	\$15.00	\$60.00
\$4.50	0	0	\$18.00	0	\$58.50	\$67.50	\$22.50	\$112.50	\$67.50	0	\$31.50	\$67.50
\$4.00	\$40.00	0	\$28.00	0	\$60.00	\$80.00	\$40.00	\$160.00	\$100.00	0	\$100.00	\$80.00
\$3.50	\$70.00	\$17.50	\$35.00	0	\$63.00	\$105.00	\$49.00	\$192.50	\$157.50	0	\$122.50	\$105.00
\$3.00	\$105.00	\$30.00	\$45.00	0	\$75.00	\$135.00	\$54.00	\$210.00	\$165.00	0	\$150.00	\$180.00
\$2.50	\$125.00	\$50.00	\$42.50	0	\$75.00	\$150.00	\$62.50	\$250.00	\$187.50	0	\$200.00	\$250.00
\$2.00	\$200.00	\$74.00	\$40.00	\$20.00	\$110.00	\$200.00	\$70.00	\$300.00	\$300.00	0	\$200.00	\$300.00
\$1.50	\$225.00	\$94.50	\$37.50	\$22.50	\$105.00	\$300.00	\$126.00	\$282.00	\$375.00	0	\$210.00	\$412.50
\$1.00	\$200.00	\$75.00	\$30.00	\$25.00	\$80.00	\$250.00	\$150.00	\$225.00	\$300.00	\$5.00	\$200.00	\$425.00
\$0.50	\$150.00	\$50.00	\$15.00	\$12.50	\$60.00	\$175.00	\$100.00	\$175.00	\$175.00	\$5.00	\$125.00	\$250.00

Total Revenue = Price × Quantity Sold at that price (All information is contained in Table 1 in Section IV).

TABLE 8.4: Cost Data

Restaurant	Taco Villa	Wildcat Den	Veggie Vitals	Consumer Sci Kitchen	Fleur de Lys	Bubba’s Steak House	Sally’s soup & salad	Bennie’s hamburger	Hunan Work chicken chow mein	Borsch Palace soup	Pasta Place spaghetti	Roastery chicken & veggies
Cost Item Variable Costs												

TABLE 8.4: (continued)

Restaurant	Taco Villa	Wildcat Den	Veggie Vitles	Consum Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's	Bennie's	Hunan Work	Borsch Palace	Pasta Place	Roastery
labor per serving	\$0.20	\$0.05	\$0.20	\$0.10	\$0.60	\$0.30	\$0.40	\$0.20	\$0.20	\$0.20	\$0.20	\$0.40
ingredients per serving	\$0.20	\$0.75	\$0.50	\$0.025	\$2.80	\$2.20	\$0.75	\$1.00	\$0.20	\$0.10	\$0.75	\$2.15
Fixed Costs												
stall rental	daily \$25.00	\$25.00	\$25.00	0	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
equipment rental	daily \$5.00	\$5.00	\$5.00	0	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00

TABLE 8.5: Computed Daily Costs

Restaurant	Taco Villa	Wildcat Den	Veggie Vitles	Consum Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's	Bennie's	Hunan Work	Borsch Palace	Pasta Place	Roastery
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	soup & salad	hamburger	chicken chow mein	soup	spaghetti	chicken & veggie
Price	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:	Total Daily Costs at Each Price:
\$10.00	\$30.00	\$30.00	\$30.00	0	\$33.40	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$37.65
\$9.50	\$30.00	\$30.00	\$30.00	0	\$36.80	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$37.65
\$9.00	\$30.00	\$30.00	\$30.00	0	\$40.20	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$37.65
\$8.50	\$30.00	\$30.00	\$30.00	0	\$43.60	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$37.65
\$8.00	\$30.00	\$30.00	\$30.00	0	\$47.00	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$40.20
\$7.50	\$30.00	\$30.00	\$30.00	0	\$50.40	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$42.75
\$7.00	\$30.00	\$30.00	\$30.00	0	\$53.80	\$32.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$45.30
\$6.50	\$30.00	\$30.00	\$30.00	0	\$57.20	\$37.50	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$47.85
\$6.00	\$30.00	\$30.00	\$30.00	0	\$60.60	\$40.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$50.40
\$5.50	\$30.00	\$30.00	\$30.00	0	\$64.00	\$42.50	\$30.00	\$33.60	\$30.00	\$30.00	\$30.00	\$55.50
\$5.00	\$30.00	\$30.00	\$30.00	0	\$67.40	\$55.00	\$30.00	\$42.00	\$32.00	\$30.00	\$32.85	\$60.60
\$4.50	\$30.00	\$30.00	\$32.80	0	\$74.20	\$67.50	\$35.75	\$60.00	\$36.00	\$30.00	\$36.65	\$68.25
\$4.00	\$34.00	\$30.00	\$34.90	0	\$81.00	\$80.00	\$41.50	\$78.00	\$40.00	\$30.00	\$53.75	\$81.00
\$3.50	\$38.00	\$34.00	\$37.00	0	\$91.20	\$105.00	\$46.10	\$96.00	\$48.00	\$30.00	\$63.25	\$106.50
\$3.00	\$44.00	\$38.00	\$40.50	0	\$115.00	\$142.50	\$50.70	\$114.00	\$52.00	\$30.00	\$77.50	\$183.00
\$2.50	\$50.00	\$46.00	\$41.90	0	\$132.00	\$180.00	\$58.75	\$150.00	\$60.00	\$30.00	\$106.00	\$285.00
\$2.00	\$70.00	\$59.60	\$44.00	\$1.25	\$217.00	\$280.00	\$70.25	\$210.00	\$90.00	\$30.00	\$125.00	\$412.50
\$1.50	\$90.00	\$80.40	\$47.50	\$1.875	\$268.00	\$530.00	\$126.60	\$255.60	\$130.00	\$30.00	\$163.00	\$731.25

TABLE 8.5: (continued)

Restaurant	Taco Villa	Wildcat's Den	Veggie Vitals	Consumer Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's	Bennie's Work	Hunan Palace	Borsch	Pasta Place	Roastery	
	\$1.00	\$110.00	\$90.00	\$51.00	\$3.125	\$302.00	\$655.00	\$202.50	\$300.00	\$150.00	\$31.50	\$220.00	\$1113.75
	\$0.50	\$150.00	\$110.00	\$51.00	\$3.125	\$438.00	\$905.00	\$260.00	\$450.00	\$170.00	\$33.00	\$267.50	\$1305.00

Daily costs are computed by multiplying the amount sold at each price (for a given restaurant) — information located in Table 1 in Section IV— by the variable costs (labor and ingredients costs) and adding it to the fixed cost (stall and equipment rental). The cost information for each restaurant is located in Table 2 in Section IV.

TABLE 8.6: Computed Daily Profit

Restaurant	Taco Villa	Wildcat's Den	Veggie Vitals	Consumer Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's	Bennie's Work	Hunan Palace	Borsch	Pasta Place	Roastery	
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	soup & salad	hamburger	chicken chow mein	soup	spaghetti	chicken & veggie	
Price	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	Daily Profit at Each Price:	
\$10.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$23.40	-\$22.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$7.65	
\$9.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$17.80	-\$23.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$9.15	
\$9.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$13.20	-\$23.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$10.65	
\$8.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$9.60	-\$24.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$12.15	
\$8.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$7.00	-\$24.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$8.20	
\$7.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$5.40	-\$25.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$5.25	
\$7.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$4.80	-\$25.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$3.30	
\$6.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$5.20	-\$18.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$2.35	
\$6.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$6.60	-\$16.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$2.40	
\$5.50	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$9.00	-\$15.00	-\$30.00	-\$17.10	-\$30.00	-\$30.00	-\$30.00	-\$0.50	
\$5.00	-\$30.00	-\$30.00	-\$30.00	-\$30.00	-\$12.40	-\$5.00	-\$30.00	\$8.00	-\$7.00	-\$30.00	-\$17.85	-\$0.60	
\$4.50	-\$30.00	-\$30.00	-\$14.80	0	-\$15.70	0	-\$13.25	\$52.50	\$31.50	-\$30.00	-\$5.15	-\$0.75	
\$4.00	\$6.00	-\$30.00	-\$6.90	0	-\$21.00	0	-\$1.50	\$82.00	\$60.00	-\$30.00	\$46.25	-\$1.00	
\$3.50	\$32.00	-\$16.50	-\$2.00	0	-\$28.20	0	\$2.90	\$96.50	\$109.50	-\$30.00	\$59.25	-\$1.50	
\$3.00	\$61.00	-\$8.00	\$4.50	0	-\$40.00	-\$7.50	\$3.30	\$96.00	\$113.00	-\$30.00	\$72.50	-\$3.00	
\$2.50	\$75.00	\$4.00	\$0.60	0	-\$57.00	-\$30.00	\$3.75	\$100.00	\$127.50	-\$30.00	\$94.00	-\$35.00	
\$2.00	\$130.00	\$14.40	-\$4.00	\$18.75	-\$107.00	0	\$80.00	\$0.25	\$90.00	\$210.00	-\$30.00	\$75.00	-\$112.50
\$1.50	\$135.00	\$14.10	-\$10.00	\$20.625	-\$163.00	0	\$230.00	0	\$26.40	\$245.00	-\$30.00	\$47.00	-\$318.75
\$1.00	\$90.00	-\$15.00	-\$21.00	\$21.875	-\$222.00	0	\$405.00	-\$52.50	-\$75.00	\$150.00	-\$26.50	-\$20.00	-\$688.75
\$0.50	\$0	-\$60.00	-\$36.00	\$9.375	-\$378.00	0	\$730.00	-\$160.00	-\$275.00	\$5.00	-\$28.00	-\$142.50	-\$1055.00

Numbers in bold indicate maximum profit or minimum loss. It is at this price that the restaurant will sell its entree. Profit is computed by subtracting total cost (Table 4 in Section IV) from total revenue (Table 3 in Section IV) at each

price for each restaurant.

Blank Tables for Computations

The following three pages contain worksheets that can be used by students to compute the following:

Table 2: the **total revenue** that each restaurant will receive (per day, at each price)

Table 4: the **total cost** that each restaurant will bear (per day, per item, at each price)

Table 5: the **total profit** that each restaurant will make (per day, at each price).

Students should be given the other tables that are referenced at the bottom of the worksheets (e.g. Table 2, Total Revenue references Table 1) at the same time that they are given the worksheet since they must rely on the referenced table to complete the worksheet.

Tables showing the completed computations (i.e., the “answer keys”) are also included in this Section.

These worksheets can be used as homework for individual students, as an activity for a group, or as part of a teacher-lead discussion in a clarifying lesson.

TABLE 8.7: Total Revenue

Restaurant	Taco Villa	Wildcat's Den	Veggie Vitals	Consumer Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's soup	Bennie's hamburger	Hunan chicken	Borsch soup	Pasta Palace	Roastery chicken
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	soup & salad	hamburger	chicken chow mein	soup	spaghetti	chicken & veggie
Price	Total Revenue at Each Price:											
	\$10.00											
	\$9.50											
	\$9.00											
	\$8.50											
	\$8.00											
	\$7.50											
	\$7.00											
	\$6.50											
	\$6.00											
	\$5.50											
	\$5.00											
	\$4.50											
	\$4.00											
	\$3.50											
	\$3.00											
	\$2.50											
	\$2.00											
	\$1.50											
	\$1.00											
	\$0.50											

Total Revenue = Price × Quantity Sold at that price (All information is contained in Table 1 in Section IV).

TABLE 8.8: Daily Costs

Restaurant	Taco Villa	Wildcat's Den	Veggie Vites	Consumer Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's soup	Bennie's hamburger	Hunan chicken	Borsch Palace	Pasta Place	Roastery chicken
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	salad				spaghetti	veggies
Price	Total Daily Costs at Each Price:											
	\$10.00											
	\$9.50											
	\$9.00											
	\$8.50											
	\$8.00											
	\$7.50											
	\$7.00											
	\$6.50											
	\$6.00											
	\$5.50											
	\$5.00											
	\$4.50											
	\$4.00											
	\$3.50											
	\$3.00											
	\$2.50											
	\$2.00											
	\$1.50											
	\$1.00											
	\$0.50											

Daily Costs are computed by multiplying the amount sold at each price (for a given restaurant) — information located in Table 1 in Section IV — by the variable costs (labor and ingredients costs) and adding it to the fixed cost (stall and equipment rental). The cost information for each restaurant is located in Table 2 in Section IV.

TABLE 8.9: Daily Profit

Restaurant	Taco Villa	Wildcat's Den	Veggie Vites	Consumer Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's soup	Bennie's hamburger	Hunan chicken	Borsch Palace	Pasta Place	Roastery chicken
Entree	beef tacos	sub sandwich	veggie sandwich	meat and potatoes	crab crepe	steak	salad				spaghetti	veggies

TABLE 8.9: (continued)

Restaurant	Taco Villa	Wildcat's Den	Veggie Vitals	Consumer Sci Kitchen	Fleur de Lys	Bubba's Steak House	Sally's	Bennie's Work	Hunan Palace	Borsch Palace	Pasta Place	Roastery
Price	Daily Profit at Each Price:											
	\$10.00											
	\$9.50											
	\$9.00											
	\$8.50											
	\$8.00											
	\$7.50											
	\$7.00											
	\$6.50											
	\$6.00											
	\$5.50											
	\$5.00											
	\$4.50											
	\$4.00											
	\$3.50											
	\$3.00											
	\$2.50											
	\$2.00											
	\$1.50											
	\$1.00											
	\$0.50											

Profit is computed by subtracting total cost from total revenue at each price for each restaurant.

Transcript of Voice Mail Messages

1. FROM THE PRINCIPAL TO THE STUDENT COUNCIL

This is from Principal Campbell to the student council - I'm forwarding some voice mail messages I've received about the new food court. These are important people in our community, so please pay close attention to their concerns about the restaurants you're considering.

2. FROM RITA PRICE, EXECUTIVE DIRECTOR OF THE GROVE AREA SCHOOL-TO-WORK PROGRAM

Dr. Campbell, this is Rita Price from the Grove Area School-to-Work Program. I hope your student council understands why our own Wildcat's Den should be one of the restaurants chosen for the new food court. Wildcat's Den, if it gets into the food court, will be owned and operated by our students here at Oak Grove High School through our school-to-work restaurant class. Kids who take the restaurant class will get hands-on experience, learning how to prepare food, order inventory, set prices and serve the public. Currently, 25% of all Oak Grove students are involved in our career classes, so this opportunity would help many of them. Many of these kids can move into jobs in hotels and restaurants once they have experience, and the Wildcat's Den will give them an excellent opportunity. Please remind the student council how important this is.

3. FROM EDITH CASH, PTA PRESIDENT

Hi, this is Edith Cash, PTA President. At our last PTA meeting you mentioned that the student council was picking

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the restaurants for the new food court. Wow! I just looked at the list of choices. The quality of food served by some of these bidders is just awful. Meat-filled tacos? Fast food hamburgers? Spaghetti with meat sauce? These are all such high-fat items! And where are the fresh ingredients? I really don't think these are healthy foods for growing young people. We're parents and we're worried about the health of our children. And quite frankly, many of the PTA members question the ability of teenagers to make wise decisions about what to eat for lunch. We talked about this at length at the recent PTA meeting and we think that limiting the students' options to only healthy food would encourage our kids to eat well. Please let the student council know that the PTA parents don't want to see fast food restaurants in our student food court.

4. FROM THE GALLOPING GOURMETS CLUB

Mr. Campbell, the Galloping Gourmets Club just wanted you to know that we were extremely happy to see that two outstanding restaurants, Fleur de Lys and the Roastery, were on the list of bidders for food court. We take eating seriously at the Gourmets Club and we are tired of cardboard hamburgers and fat-filled tacos. Just because we're teenagers doesn't mean we want to eat tasteless garbage. If money is an issue for bringing in decent restaurants, no problem. Our parents will gladly give us more allowance so we can eat appetizing food. And please remind the student council that our parents are very active members of the Booster Club. They do a lot for this school. Students who play in the band, take drama, and receive college financial aid should know that funds are provided by the Boosters. As a matter of fact, because of the good will and hard work of our parents, the student council members will be attending the national leadership conference - a trip sponsored by the Booster Club. Please remind the student council to keep the Galloping Gourmets Club's gastronomical interests in mind when making their selections.

5. FROM VITAL VEGETARIANS

Hi Dr. Campbell. I'm calling about the new restaurants that will be going into the school's food court. Vital Vegetarians are members of this student body and we are committed to preserving the planet and avoiding needless animal sacrifice. We want to see a food court that respects animals, with meals that emphasize nutritious grains and legumes instead of meat. The food court needs a vegetarian alternative, so we want to encourage the student council to include Veggie Vittles as one of the restaurants. Vegetarian students are entitled, just like any other student, to a place on campus where they can eat lunch. Also, as you may know, both Taco Villa and Hunan Wok are being boycotted by people concerned about the environment. These restaurants are partly responsible for the destruction of the rain forest. They are cutting down the rain forest at an alarming rate in order to graze cattle and they are using the trees they cut to produce their throw-away food containers. As Oak Grove High School students and members of the Vital Vegetarians, we are concerned about having such environmentally irresponsible restaurants in our food court. Please pass our concerns on to the student council.

6. FROM MS. LOER, SCHOOL COUNSELOR

Dr. Campbell this is Ms. Loer from the counseling office. It has been brought to my attention by a number of parents and community folks, who want to remain nameless at this time, that the prices charged for the food sold in our new food court may be out of reach for many of our students. You know, 25% of our students are considered low income. These students aren't likely to bring up the fact that they can't afford the food but it is true. It's going to cause some of these kids to go hungry since they are not allowed to go off campus during school hours. Students should not be forced to go hungry and certainly students should not be singled out and stigmatized because they can't afford our food. I think that would be an unacceptable situation. I hope that our student council understands that the Consumer Sciences Kitchen is the only place these kids can afford to eat. Student council representatives took an oath to serve all students and they have a responsibility to consider the needs of lower income kids.

7. FROM THE PRINCIPAL REGARDING MRS. STRAVINSKY

One more message here for the student council from Dr. Campbell. As you know, the Borscht Palace, one of the restaurants bidding for space in our new food court, is owned by Tanya Stravinsky. Mrs. Stravinsky donated the money used by the school district to build our new student center. Those wonderful facilities - the game room, study hall, food court, the computer lab, and the theater - would not be yours to enjoy had it not been for Mrs. Stravinsky. Now, in the last conversation I had with her, she said that she would love to stay in contact with this school by cooking food from her native land. Money is not the issue. She doesn't care if the restaurant makes money. She

would just like to be a part of the project she helped build. We are hoping Mrs. Stravinsky will contribute heavily to the construction of the swimming pool and tennis courts that we have planned for the student center. So, I'm asking you to keep that in mind when making your decisions.

OAK GROVE CITY HIGH SCHOOL

TO: Student Council

FROM: Dr. Stanley Campbell, Principal

RE: School Board Members

I thought it would help prepare you for your upcoming presentation to the board if I gave you a heads-up about the viewpoints of the board members:

Dr. Chris Calderon is President of the Board of Trustees. As a businessperson with an advanced degree in economics, Dr. Calderon is concerned about maintaining profitable restaurants in the food court so that students are able to afford clubs, student activities, and social events.

Marcus Cash is the husband of our PTA president, Mrs. Edith Cash. Like his wife, Mr. Cash is concerned about the health and well-being of Oak Grove High School students. He wants to see healthy food served in the food court and he wants students to have the opportunity to learn valuable job skills through running and operating a restaurant in the food court. Mr. Cash is also concerned about low income students who cannot afford high priced lunches.

Alex Muir is a staunch environmentalist, politically liberal, and concerned about the right of vegetarian students to have a non-meat source of food on campus. Muir is also boycotting Hunan Wok and Taco Villa because of their dismal environmental records and concerns about their labor practices. Muir is no friend of the rich and does not consider building the tennis courts or the pool a high priority.

Mrs. Tanya Stravinsky is a non-voting, honorary member of the school board. As one of the school's major benefactors, she is interested in the long term well-being of the school, including the building of the tennis courts and pool. She has a special interest in cooking from her homeland and in gourmet food from around the world. She supports the Galloping Gourmet Club's desire to have quality food on campus.

Teacher Materials

Economics Review

Demand

Table 1, which shows and the comparison of the demand curves for different restaurants, can be used to illustrate movement along the demand curve, shifts in curves, and computations of elasticity. For example, you could:

- Draw a **demand schedule** for all (or selected) restaurants from Table 1. (See discussion below). Discuss the relationship between price and *quantity demanded* that occurs as one moves up and down an individual curve.
- Discuss **changes in demand** that might occur with differing student demographics. (See description below). For example, if the student body is "rich," the demand for Fleur de Lys or the Roastery might be greater. The demand for Taco Villa might be reduced should students discover that the cornmeal in taco shells is carcinogenic.
- Compute **elasticities**. This will show students how consumers respond to price changes at each initial price. This should be done only for advanced students or classes. Simply pick two prices and associated quantities for a particular restaurant and plug into the following formula for an arc elasticity:

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$$\frac{\frac{Q_1 - Q_2}{(Q_1 + Q_2)/2}}{\frac{P_1 - P_2}{(P_1 + P_2)/2}}$$

where:

P_1 = the first price selected

P_2 = the second price selected

Q_2 = the quantity associated with the second price

Q_1 = the quantity associated with the first price

Changes in Quantity Demanded

A fundamental characteristic of demand is the law of demand: *all else being equal, as price falls, the quantity demanded increases*. There is an inverse relationship between price and quantity demanded, and this is shown for each restaurant in Table 1. Because the total amount of money brought into the firm (i.e. total revenue) is the number sold (quantity) times the price, the law of demand means that total revenue will change as price changes. This is shown for any particular restaurant in the Total Revenue computations on Table 3.

Changes in Demand

The basic determinants of demand are:

- tastes or preferences of consumers
- consumers' income
- prices of related goods and services (complements and substitutes)
- expectations about future prices and income
- (for market demand) number of consumers

Each of these determinants can be illustrated using Table 1 and the audio tapes. The demand for food in each restaurant (at any given price) varies. At a price of \$.50, few students demand borsch but 500 kids want chicken. This is because of taste and preferences. Income as a determinant of demand can also be illustrated. For example, few students will purchase food at any restaurant when meals are priced at \$10. This is due to the lack of "ability" to pay. The price and availability of other meals (substitutes) can also be shown in this table. For example, the demand for Hunan Wok might be greater if Taco Villa were not operating or if Taco Villa charged \$5.00 for a taco. Expectations also impact demand. For example, demand for Hunan Wok might be greater today if students knew that the prices were going to double tomorrow. Finally, demand will always increase as the number of students in the market increase. For example, Bennie's could sell many more hamburgers at a high school with 3,000 students than at one with 760 students.

On the audio tape, the school counselor tells of kids' ability to afford food (income), while other callers show the varying tastes for food among students.

Costs and Supply

Costs

The data on quantity sold at each price (Table 1) are combined with the per unit costs of each firm's production to derive a firm's total cost curve. Just as a firm's total revenue is associated with the demand curve, the firm's total cost is associated with the supply curve.

In the short run, costs are either fixed or variable. Because **fixed costs** do not vary with output, they are associated with the very existence of the firm and must be paid even when the firm is not producing. In our example, the firm must pay the rental to the Food Court and for the equipment (because of lease agreements) and these costs will not vary with production. Other examples include interest on a firm's bonded indebtedness, insurance premiums, and

the salaries of top management and key personnel. Fixed costs cannot be avoided (in the short run) or controlled by the firm.

Variable costs, which change with production, increase with each one-unit increase in production. Thus, such costs continue to rise as output increases. In our example, variable costs include labor and ingredient costs. It is fairly clear that as one sells more food one must buy more ingredients and hire more labor (to cook it and serve it). Other examples of variable costs may include fuel, power, transportation, and other services. Variable costs are those that can be controlled by the firm by controlling the amount produced.

A firm's total cost of producing is the summation of its fixed and variable costs.

Supply

Because the market, and not the firm, determines revenue in the competitive market, the amount produced at each price (its supply) is determined by each firm's cost of production. This is an important relationship for students to recognize. Thus, the firm's "supply" curve is simply its (marginal) cost curve. Assuming factor costs do not vary with the number of firms in an industry (constant cost industry), the market supply curve is simply the summation of each firm's supply curve. The cost factors that determine a firm's "supply" curve, also determine the industry supply curve.

Profit

Given how much will be sold at each price (i.e. demand for a firm's product), the firm is faced with three related questions: 1. Should it produce? 2. If so, how much of a product should be produced (and at what price, unless the firm is in a *perfectly* competitive market)? and, 3. What profit or loss will be realized?

- a. A firm should produce if it makes a profit. This is obvious. However, if it is not making a profit, it should still operate in the short run as long as its loss is less than its fixed costs. In this case, it loses less money by operating because firms must pay fixed costs even if they shut down. In our example, firms also might operate at a loss because of noneconomic motives (e.g. Tanya Stravinsky). Alternatively, firms might operate at a loss today because they expect to gain customers in the future (i.e. long-run profit maximization). For example, Fleur de Lys might be willing to operate at a loss in the Food Court because it expects to capture young customers, who will develop a taste for Fleur de Lys' food.
- b. A firm will set price at the amount where profit is greatest. For example, Veggie Vittles will price at \$3.00 , the Home Economics Kitchen will price at \$1.00 , and Taco Villa will price at \$1.50 . [Note: the maximum profits (or minimum losses) that each restaurant can make are in bold face on Table 5 in Section IV]. The quantity sold at the profit maximizing price is determined from Table 1 in Section IV (Demand for Entrees), which shows how much students will purchase at the profit maximizing price. At \$3.00 , Veggie Vittles will sell 15 veggie sandwiches, the Home Economics Kitchen will sell 25 meat and potato meals, and Taco Villa will sell 150 tacos.
- c. Profit or loss realized at each price is shown on Table 5 in Section IV, which can be used to illustrate how profits or losses will vary with changes in price, total revenue (Table 3, in Section IV), and total costs (Table 4, in Section IV).

Graphs and Their Meanings

A graph is a visual representation of the relationship between two variables. The table below illustrates the relationship between price and quantity demanded for tacos at Taco Villa. Although this information is obtained from Table 1 in Section IV (and hence is merely a different representation of the same information), the graphic representation of price and quantity demanded illustrates the concept of a demand curve. That is, it shows visually or graphically how consumption varies with price of the good. In the graph below, we illustrate a linear (straight line) and nonlinear (changing slope) approximation of the demand curve for tacos that is depicted in tabular form in Table 1 in Section IV.

In the graph below, price is presented on the vertical axis and is the determining factor or independent variable. Consumption (quantity demanded) depends on price and is represented on the horizontal axis. (Actually, the demand

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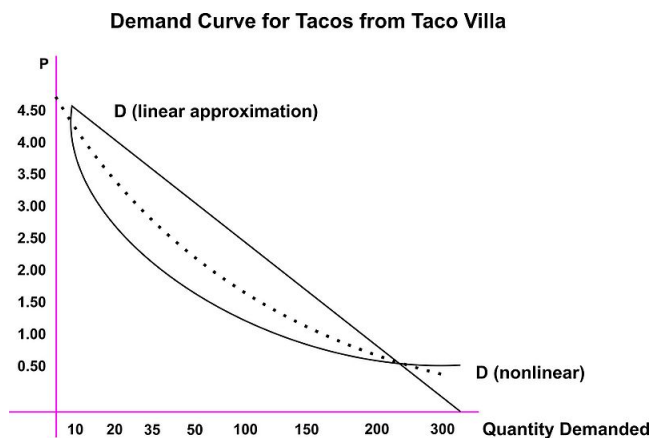
curve differs from the traditional graphic portrayal of relationships, which typically show the independent variable on the horizontal axis and the dependent variable on the vertical axis).

We first arrange the vertical and horizontal scales of the graph to reflect the range of values on price and consumption, as well as mark the steps in convenient increments. We then locate the various points that reflect the information on quantity demanded at a particular price that is provided in Table 1 in Section IV. Each of the points illustrated in Table 1 can be used to plot a demand curve for a particular restaurant. For example, at a price of \$4.50, no tacos will be purchased; at \$4.00, 10 tacos will be purchased; at \$3.50, 20 tacos will be purchased.

The downsloping demand curve illustrates the negative or inverse relationship between the two variables (price and quantity demanded). These two variables move in opposite directions. As price goes up, demand goes down. The supply or (marginal) cost curve illustrates a positive or direct relationship between cost and quantity produced. Should cost information be plotted on a graph, an upsloping curve would result because cost and production move in the same direction.

The simple two-variable graph ignores many other factors that might affect the amount of tacos purchased. These other factors (e.g. income, tastes and preferences, price of other goods and services, number of people in the market) are illustrated by shifting the curve. For example, should Oak Grove High School double in size, the demand curve would shift to the right, demand would increase, indicating that at every price more tacos would be purchased.

Demand Curve for Tacos from Taco Villa



Concept Definitions

The curriculum is designed to teach the following concepts:

Competing Needs Because resources are *scarce*, the redistribution of goods often means that one group (or individual) often gains only at another's expense. That is, to make someone better off, someone else must be made worse off because individuals are competing for the same resources.

Costs (of production): The measure of what has to be given up in order to achieve or produce something. Total costs include both *opportunity costs*, or the cost of alternative uses of resources, and *direct costs*, or total money outlays.

Demand Purchases of a good or service that people are actually able and willing to make, given price and choices available to them. The "**law of demand**" states that there is a negative (or inverse) relationship between price and quantity demanded. That is, as price increases (decreases) the amount of a good purchased decreases (increases). Consumers' demand is determined by their tastes, income, and price of other goods. The **demand schedule** is a table showing the quantities of a good that will be purchased at various prices. The **demand curve** is a curve that relates the price of a product and the quantity of the product that individuals are able and willing to purchase. **Aggregate Demand** is the total demand for goods and services in the economy by

households (for consumer goods), by firms and government (for investment goods), and by other countries (exports).

Economic Profit A firm's *total revenue* (price times number of items sold) minus the total cost of production, which includes both *direct* and *opportunity costs*. Negative *economic profits* are called losses. Economic profits indicate that a firm is generating revenue above and beyond the next best use of its productive resources.

Equilibrium Price The price at which the quantity of the product that buyers are able and willing to purchase exactly equals the quantity of the product that sellers will sell.

Equilibrium Quantity The quantity at which the amount that buyers are able and willing to purchase exactly equals the amount of the product that sellers will sell. This occurs at the *equilibrium price*.

Opportunity Costs The real sacrifice involved in achieving something. The value of the next best opportunity that would have to be foregone in order to achieve a particular thing.

Profit *Total revenues* minus total *direct costs*. This is distinguished from **economic profit** which is the residual of *total revenue* minus *total costs* when a normal rate of return on investment is included as a part of cost.

Scarcity A condition where less of something exists than people would like if the good had no cost. Scarcity arises because resources are limited and cannot accommodate all of our unlimited wants.

Total Cost The sum of *fixed cost* and *variable cost*.

Total Revenue The total amount of money brought in by a firm. This is computed by multiplying the unit price of the product times the number of units purchased.

Tradeoff An exchange relationship denoting how much of one good (or resource) is needed to get another good (or resource).

Teachers can also demonstrate the following concepts using this lesson:

Direct Costs The accountant's definition of cost. The total money expenditure or outlays necessary to achieve a resource or good/service.

Elasticity The measure of responsiveness of one variable to changes in another. For example, the **price elasticity of demand** is the change in the quantity demanded of a good as a result of a change in its price.

Fixed Costs *Costs* to the firm that do not vary with output. These *costs* are borne even though no output is produced and are often referred to as "overhead."

Indirect Costs See *Opportunity Cost*.

Supply The amount of a good or service that firms are prepared to sell at a given price. The firm determines how much to supply using its marginal cost curve. **Industry supply** is the summation of an individual firm's marginal cost curves (in a constant cost industry). The **supply schedule** is a table showing the amount of a product that will be produced at a given price. The **supply curve** relates the quantity of a good supplied by a firm (or market) at each price. The **law of supply** dictates that the curve is upsloping, indicating that more will be produced as the price of the good increases. **Aggregate Supply** is the total amount of goods and services available for consumption and consists of both domestically produced goods and services and imports.

8.1. THE HIGH SCHOOL FOOD COURT

Variable Costs *Costs that vary with the amount of production.*

Questions from School Board Members

Dr. Chris Calderon, School Board President (played by the teacher)

Background: *The school board president, a businessperson with an advanced degree in economics, wants a market-based distribution of restaurants in the food court. Dr. Calderon argues that it would be an inefficient use of resources to select restaurants other than those with the highest profit.*

Points to be made:

- a. To bring restaurants into the food court on any basis other than “highest profit” is inefficient. Why should the student council have less money to spend because they don’t make economically efficient decisions?
- b. To select restaurants on any basis other than highest profits means that the student council must give up revenue. Less revenue will impact the school’s social events. How can this be explained to the student body? What will be given up?

Most in Favor of: Taco Villa, Hunan Wok, Bennie’s, The Pasta Place, Sally’s Soups and Salads

Most Opposed to: Fleur de Lys, The Roastery, Veggie Vittles, Bubba’s Steak House, Borscht Palace

Questions from School Board Members

Marcus Cash, School Board Member

Background: *Marcus Cash’s main concern is for the needs of students, especially those in the School-to-Work program, Consumer Sciences classes, and low-income students. In response to the argument for selecting the restaurants that bring in the most profit, Mr. Cash, like the counselor, argues for equity and “investing in our students.” Mr. Cash believes this can be done by keeping open the Wildcat’s Den, which provides students with work skills, and the Consumer Sciences Kitchen, which provides relatively nutritious, low-cost meals for students. In addition, because he is married to Edith Cash, he strongly supports the PTA’s concerns about healthy food choices.*

Points to be made:

- a. Why isn’t serving healthy food the primary goal of the food court? The student council should focus on the needs of students and not on which restaurants make the most money (i.e. the market-based solution). Money/profit is not everything and should not be the student council’s major goal.
- b. Why aren’t we supporting education for our students? Selecting restaurants that make the most profit might bring in the most money for the student council, but in the long run it is not a prudent strategy. We need successful grads that return support to the school (like Tanya). This will not happen unless we invest in our students today so that they support our school in the future. This can be done by opening the Wildcat’s Den, which invests in student skills, and the Consumer Sciences Kitchen.
- c. Why aren’t we concerned about the needs of our low-income students (25% of our students)? The gourmet/health food people think only of themselves. Their alternatives are not fair to our low-income students who cannot afford meals at the restaurants that they support. If we are concerned for all of our students, we must have low-cost, but healthy, alternatives.

Most in Favor of: Wildcat’s Den, Consumer Sciences Kitchen, Sally’s Soups and Salads, Veggie Vittles

Most Opposed to: Fleur de Lys, The Roastery, Bubba’s Steak House, Borscht Palace

Questions from School Board Members

Alex Muir, School Board Member

Background: *Alex Muir is concerned about the health of students, the environment, and the treatment of workers, and favors organic and low-fat foods, environmentally friendly production methods, and fair labor practices. Muir*

responds most favorably to the lobbies of the PTA and Vital Vegetarians. Muir is less concerned about profit than about promoting social and environmental goals, and is no friend of large corporations and the rich.

Points to be made:

- a. Why should profit be the only motive for operating a restaurant in the food court? The restaurants with the highest profits serve food that is not healthy and ruin the environment — and often underpay their workers. I mean, do you remember that book and movie, *Fast Food Nation*? Society should have loftier goals than profit — like the well-being of our children, working people, and the earth.
- b. Why shouldn't we support eating organic, environmentally responsible food? Equity concerns voiced by the counselor for certain students are as valid as equity concerns for vegetarians. People concerned about their health and the welfare of our planet have the right to eat at a restaurant that prepares healthy meals without meat or meat products. To fail to provide this alternative is discrimination.
- c. I'm not in favor of promoting the interests of rich people when we choose restaurants for the school. Mrs. Stravinsky is very generous, but having her restaurant or other ones that wealthier students want is elitist. And large corporations also have more than enough power in our society today — let's not support the franchised chain restaurants they own and make such obscene profits from.

Most in Favor of: Veggie Vittles, Sally's Soups and Salads

Most Opposed to: Taco Villa, Hunan Wok, Bennie's, Borscht Palace

Questions from School Board Members

Mrs. Tanya Stravinsky, Honorary Board Member

Background: *Tanya Stravinsky has two concerns: opening her Borscht Palace restaurant, and maintaining the quality of food in the food court. She is concerned that students will not be exposed to foods from around the world (including the Eastern European/Russian mainstay, borscht) and fine cuisine without strong input from the Gourmets Club. She represents the interests of the elite and those individuals who think that their wants should be fulfilled because they have the money (and taste) to afford it. Mrs. Stravinsky's main economic argument is that the long run well-being of the school rests with maintaining good relationships with the "elite" because their donations help fund various programs and the construction of new facilities.*

Points to be made:

1. There is a group of students who can afford the high price of better restaurants. Why shouldn't we provide these students with this option and expose other students to the finer things in life?
2. Quality, not profit, is the appropriate standard by which restaurants should be allowed to operate in the food court. Why should we only offer food at cheap prices so that everyone can afford to eat? Why don't we offer a variety of quality food, including borscht, so that students are exposed to quality food from around the world?
4. The long-term interests of the school are maintained through a steady stream of interested, wealthy benefactors. Our Boosters Club wants quality food in the food court and I want the Borscht Palace. Don't you think we must include these restaurants in the food court for the longterm benefit of our school?

Most in Favor of: Borscht Palace, Fleur de Lys, The Roastery

Most Opposed to: Taco Villa, Hunan Wok, Bennie's, The Pasta Place

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

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We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5, “Meets Standards” equals a 3, and “Does Not Meet Standards” equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

TABLE 8.10: The High School Food Court: Rubric for Group Oral Presentation to School Board

Component And The Recommended Value	Exceeds Standards (Score 4-5)	Meets Standards (Score 3)	Does Not Meet Standards (Score 1-2)
Overall Understanding of the Problem (10%) Key Points: <ul style="list-style-type: none"> • Meeting the needs of the student body • Profit maximization • The need for the school board to reach consensus 	Describes the problem clearly, accurately and completely in terms of all key points Solution to the problem is completely consistent with the scenario as presented; has not altered the parameters of the problem and/or “made up” facts to avoid grappling with key aspects of economics	Describes the problem clearly and accurately in terms of all key points Solution to the problem is generally consistent with the scenario as presented; has not significantly altered the parameters of the problem and/or “made up” facts to avoid grappling with key aspects of economics	Does not describe the problem clearly and/or accurately in terms of some or all key points Solution to the problem is not consistent with the scenario as presented; may have altered the parameters of the problem and/or “made up” facts to avoid grappling with key aspects of economics
Understanding of Economics (60%) Key Points: <ul style="list-style-type: none"> • Economics criteria used in making selections • Means by which profit maximization is met (total revenue minus total costs) • Demand for entrees • Opportunity costs if profit is sacrificed 	All of the key points are clearly, accurately and completely discussed using sound economic thinking and vocabulary	All of the key points are clearly and accurately discussed while attempting to use economic thinking and vocabulary	Any or all of the key points may be missing and/or inaccurately discussed; does not use economic thinking and vocabulary

TABLE 8.10: (continued)

Component And The Recommended Value	Exceeds Standards (Score 4-5)	Meets Standards (Score 3)	Does Not Meet Standards (Score 1-2)
Defense of Presentation (Q &#38; A) (10%)	All members of the group are able to directly answer questions and persuasively justify their decisions in terms of economics Answers to questions use correct, detailed economic thinking and make powerful, articulate points in defense of the group's proposal	Most members of the group are able to answer questions and justify their decisions in terms of economics Answers to questions use correct economic thinking and make articulate points in defense of the group's proposal	Only one or no member of the group is able to correctly answer questions or justify decisions in terms of economics Answers to questions may use incorrect economic thinking and include incorrect or confusing points
Defense of Presentation (Q &#38; A) (continued) (10%)	Answers to questions may bring new, relevant information to light; answers do not simply repeat the same information over again No information used in an answer is assumed or fictionalized; if necessary an answer may be, "I don't know" and the need for further study is acknowledged	Answers to questions may bring new, relevant information to light; some answers may simply repeat the same information over again No significant information used in an answer is assumed or fictionalized	Answers to questions do not bring new information to light and answers simply repeat the same information over again Some significant information used in an answer may be assumed or fictionalized
Visual Aids for Presentation (10%)	Visual aids use accurate information and enhance the presentation by addressing key economic concepts Layout, color, design elements, headings, and text are carefully done and professional-looking; all information is clearly readable and understandable	Visual aids use accurate information and support the presentation by addressing key economic concepts Layout, color, graphic elements, headings, and text show some care was taken; significant information is for the most part clearly readable and understandable	Visual aids have incorrect information and/or distract from the presentation, and/or do not address key economic concepts Layout, color, graphic elements, headings, and text show little evidence that care was taken; significant information is unclear or not understandable

TABLE 8.10: (continued)

Component And The Recommended Value	Exceeds Standards (Score 4-5)	Meets Standards (Score 3)	Does Not Meet Standards (Score 1-2)
Oral Presentation Skills (10%)	Stays within the 5 minute time limit and is not redundant, wordy, nor too brief in any aspect All group members participate substantively and roughly equally Presentation is clearly organized and flows well with effective transitions; it is not rushed or drawn-out Presentation is professional in style; it features appropriate dress, posture and gestures; a clear, strong, expressive voice; frequent eye contact; awareness of the audience	Stays within the 5 minute time limit; may be a bit too brief or too lengthy in some aspects; may be somewhat wordy or repetitive All group members participate substantively Presentation is organized; some parts may be somewhat unclear, too brief or too lengthy Presentation features appropriate dress, posture and gestures; a clear voice; some eye contact; some awareness of the audience	Does not fit within the 5 min . time limit Only one group member participates substantively Presentation lacks organization Presentation style is unprofessional and/or immature; does not feature appropriate dress, posture and gestures; a clear, strong, expressive voice; frequent eye contact; awareness of the audience

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics and Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States,

BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

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CHAPTER **9**

Matildaville

CHAPTER OUTLINE

9.1 MATILDAVILLE



9.1 Matildaville

Unit Overview

Time Required

4-6 hours of class time

Project Scenario

A city, society or individual is capable of producing some level of economic activity with its current level of resources (land, labor, capital, and entrepreneurship). These resources can be used to enjoy the income from economic activity today or can be invested to increase both productivity and the capacity for income from economic activity in the future. To explore these economic concepts, students are presented with the following problem-solving scenario.

The city of Matildaville has been given some undeveloped land by a wealthy benefactor. The Director of Matildaville's Community Economic Development Agency has asked his economic policy analysts to recommend which entities should operate on the land. The analysts consult a list of possible entities compiled by a citizens group and consider the benefactor's wishes. A sudden financial crisis forces students to focus their criteria for selection more narrowly around short-term economic concerns. Each team of economic analysts is asked to write a report that describes and defends their investment strategy for Matildaville.

Concepts to be Learned

To successfully resolve the problem and complete the products required in this project, students need to understand and be able to apply the following economic concepts:

- **Economic Growth**
- **Income**
- **Interest Rates (Nominal and Real)**
- **Investment (Public and Private)**
- **Multiplier Effect**
- **Opportunity Costs**

Although an understanding of the following economic concepts is not essential to complete project tasks, teachers can use the unit to explain additional economic concepts including:

- **Bonds**
- **Crowding Out**
- **Present Value**
- **Productivity**
- **Public Debt**
- **Resources**
- **Scarcity**
- **Tradeoffs**
- **Uncertainty**
- **Rate of Return**
- **Tax**

- **Time Value of Money**

Placement In Curriculum

Matildaville may be taught anytime during a high school economics course, although its content is not central to a typical course focusing on micro- or macroeconomics. This unit introduces students to the multiplier effect, and the relationship between investment, interest, and economic growth. Matildaville also can serve as a bridge to a government/civics course, or fully within such a course if a teacher changes the emphasis from economic principles to the intersection of politics and economics at the local level. This unit also can be used to teach students skills and concepts they could apply later in another, fully authentic project that is designed by the teacher; for example, students could study land use issues and economic development in their own community.

Sequence and Key Content of PBE Units

Essential Units:

- Running in Place** – basic relationship between consumers (in the product market) and producers (in the factor market), and the circular flow of resources
- The Invisible Hand** – free markets and supply incentives
- Monopoly’s Might** – competitive markets and supply/demand forces within them
- The Greater Good** – comparative advantage and free trade
- The President’s Dilemma** – macroeconomic concepts and analysis

Additional Units:

- **The High School Food Court** – cost, revenue, profit, and demand (*primarily used to introduce PBL methodology*)
- **Matildaville** – investment and growth (*may be integrated with the study of local government/land use*)

NCEE Content Standards Addressed

Matildaville addresses the following Voluntary National Content Standards in Economics codified by the National Council on Economic Education, in partnership with the National Association of Economic Educators and the Foundation for Teaching Economics. For more information see www.ncee.net/ea/standard.

TABLE 9.1:

Standard #	Economic Concept
1	Scarcity
2	Opportunity Cost
12	Interest Rates
13	Income and Productivity
15	Investment

Project Based Learning and Project Based Teaching

Definition of PBL

Project Based Learning (PBL) is a teaching method in which students:

- Engage in a rigorous, extended process of inquiry focused on complex, authentic questions and problems
- Work as independently from the teacher as possible, and have some degree of “voice and choice”

9.1. MATILDAVILLE

- Demonstrate in-depth understanding of academic knowledge and skills
- Build 21st century skills such as collaboration, critical thinking, and presentation
- Create high-quality products and performances which are presented to a public audience

Project Based Learning shares fundamental constructivist assumptions and techniques with other approaches including: inquiry-based learning, problem-based learning, anchored instruction, authentic pedagogy, and field study. PBL is often cited as a valuable method by educators promoting differentiated instruction, multiple intelligences theory, learning styles theory, 21st century skills, and the “new 3 Rs” of rigor, relevance, and relationships.

The BIE *Project Based Economics* units are built around a scenario that presents students with an engaging, realistic problem with more than one possible reasonable solution. In BIE materials, the term “unit” is used interchangeably with “project.” This is because in PBL, the project *drives* the curriculum — it provides the structure for teaching and learning. A project is *not* just an “applied learning activity” that follows a traditionally-taught unit of instruction. Students solve the problem through the application of content knowledge and collaborative resource-gathering, investigation, discussion and decision-making. However, students do not work completely on their own or exclusively with their peers when addressing the problem presented in the scenario. PBL is most effective when accompanied by *project based teaching*.

Project Based Learning is NOT like “discovery learning” in its most basic form, in which students are provided with tools and activities that allow them to “discover” knowledge and skills with minimal guidance from a teacher. In PBL, the teacher has an essential role, that of a “coach” who guides students through the process of collaborative problem-solving and the creation of high-quality products and performances. And, of course, teachers still “teach” in PBL. They are an important provider of subject-area knowledge, and remain responsible for monitoring and assessing student learning, clarifying content-related concepts and misconceptions, assigning students to work groups, and managing what goes on in the classroom. However, the timing and extent of a teacher’s instructional interventions differ from those used in traditional approaches. Effective teachers in PBL wait for teachable moments when students are interested and ready to learn before intervening or providing the necessary content explanations; they present or clarify concepts once students realize they need to understand subject-area content in order to solve the problem. Project Based Learning is most effective when it is a collaborative effort between the teacher and students, with the teacher as the senior partner.

Components of Project Based Economics Units

Coaching students to resolve the problem posed in each *PBE* unit requires a teacher to weave together a number of instructional components while remaining focused on the economic concepts around which the project is organized. All *PBE* units include the following:

- **Project Launch/Grabber:** An “Entry Document” such as a letter or memo, or a video or audio recording with a transcript, that does three things: 1) it engages student interest in the project by placing them in a scenario; 2) it provides an initial description of the problem raised by the scenario, which may become more complex as the unit unfolds; and 3) it introduces, without definition or explanation, key economic terms that students need to understand before they can successfully resolve the problem. The Grabber activates students’ “need to know”— a key concept in PBL. Students are never “pre-taught” the content that they do not yet have a reason to learn. Before the Grabber, all the teacher needs to do in PBL is say something like, “We’re now going to learn _____ (general topic) in a project based on a realistic scenario.”
- **Driving Question and Knowledge Inventory (Know/Need to Know):** These tools help students manage the process of working to solve the open-ended problem posed by the project scenario. The Driving Question is written in a way that focuses students on the exact problem they need to resolve. The **Driving Question** is revisited as the problem evolves, and rewritten as necessary. The **knowledge inventory** is conducted at the beginning of a project and revised throughout, to keep track of what is known about the problem to be resolved and what needs to be known in order to resolve it. Typically, this is done as a whole class and teachers use chart paper or a computer to record items for each class’ unique “know” and “need to know” list. Once items from the “need to know” list are “known” they are moved to the “know” list, so students can see that they

are learning key information and skills to help them resolve the problem. Students always add items to the “need to know” list that they might think they need to learn, or are simply curious about, but eventually see as not essential for resolving the problem. This teaches the valuable skill of being able to recognize relevant information from the superfluous. Additionally, this mirrors real-world problem solving situations, where there is not always enough time or resources available to answer every “need to know” that one might want answered before a solution is needed.

Revisit the Driving Question and know/need to know list at key points during the unit. Items should be added or moved to the “know” list as new information is learned. Some items may have been learned when a new memo or other resource is provided; others may have been taught by the teacher or researched by students. Items should be added to the “need to know” list as new developments unfold in the project scenario, and when students understand economics more deeply and their task becomes clear. Items may be crossed off the need to know list when students find out something on their own, or when the teacher provides a lesson. The lesson may be in the form of a mini-lecture, discussion, reading assignment, or other activity. For some items that are easily and quickly answered, it is OK to tell students the information right away in order to move on with the unit. For example, “When is this due?” or “Who’s in the groups?” or other questions involving the logistics of the project may be answered very soon after being listed. Some vocabulary words students encounter in a piece of text and add to the need to know list — especially if they are *not* economic terms — may also be defined on the spot, if necessary for understanding.

NOTE: The know/need to know list does not have to be revisited every time a new step is taken — the process can start to bore students and take up too much time. We have noted certain steps where it is optional. Teachers should use their judgment about how often and how thoroughly to go through the process, based on the needs of their students.

- **Additional Information about the Project Scenario:** Students receive further memos, documents, and/or video and audio recordings that are authentic to the project scenario. These pieces of information help answer “need to know” items that students have identified from the Entry Document, and/or may add new items to the list. Most *PBE* units feature an additional document or recording that reveals a new “twist” later in the scenario that causes students to reevaluate their ideas for a solution.
- **Scaffolded Learning Activities:** Students are supported in a variety of ways in *PBE* units. In addition to “soft scaffolds” such as conversations with a teacher, “hard scaffolds” are provided in each unit such as charts, tables, or worksheets, to help students learn concepts and organize their ideas. Students may practice using economic concepts through oral or written exercises that build knowledge and skills necessary for the culminating task in the unit.

Efficient project based teaching generally involves selecting content resources for students to use before they embark on solving the problems presented and creating products. These can include economic textbooks, specially prepared handouts, newspaper articles, videos, CDROMs and websites. Students should be encouraged to grapple on their own or in small groups with economic concepts, and find their own answers to content-related questions as much as possible. Consequently, it is generally best not to *assign* specific resources but rather to tell students what they can easily access to find the information they need to complete project tasks. It is then up to students and their groups to decide what content resources they are going to pursue.

- **Clarifying Lessons at “Teachable Moments”:** Project Based Learning is most effective with continual dialogue between the teacher (as a coach) and students. Effective project based teachers must actively direct students toward the curriculum goals by asking probing questions in class discussions, circulating and listening to discussions in group work, and taking advantage of teachable moments when students are ready to learn. When these moments arise, the teacher has a key role to play in explaining content-related concepts and clarifying misconceptions. The teacher may offer a quick explanation to individuals or small groups, or recognize when all or most of the class needs to be taught something as a whole via direct instruction.

In *PBE*, when lectures are given, they should be short (hence the term used in these materials, *mini-lecture*) and organized. Limit lectures to the information students need at that point in the problem-solving process. A mini-lecture should be introduced by talking about it as part of the teacher’s role as “coach” for the students’ problem-solving process. It is a good idea to refer to the “Need to Know” list and say something like, “Many of you said yesterday that you had questions about _____, so I have some information that will answer those questions.” And, as in all cases when lectures are used, teachers should use the techniques of good lecturing; engage students by speaking in an interesting style, asking questions, giving examples, using visual aides, and pausing to have students think, talk, or do some activity.

In the *Step by Step Teaching Guide* section below in this unit, we have noted the general topic of each clarifying lesson. For each lesson, see the “Economics Review” material in Section V below, *Teacher Materials*. These materials are meant to be used by the teacher when putting together lessons for students, which may include the use of textbooks, other resources, and activities. The materials include a glossary of terms and information to support mini-lectures, but are not “scripts” to be read or handouts meant for students. In addition, PowerPoint slides to support mini-lectures may be found at www.bie.org, which cover the key concepts underlying each unit.

- **Notes to the Teacher:** At various points within each unit’s *Step-by-Step Teaching Guide* section, you will see two types of special notes on effective implementation of the unit:

Economics Content Notes point out key concepts students should be learning, and provide guidance on how to ensure that they do.

Potential Hurdles note certain points during the unit when students might become confused or sidetracked, and explain how to help them.

- **Formative Assessments — Individual Questioning, Pop Quizzes, Checks for Understanding with Peers, and Project Logs:** A key part of the teacher’s job in project based teaching is to monitor whether students are learning the concepts the project is designed to teach. There are several ways this can be done:
 - Listen to student discussions in small groups or as a whole class, and ask questions to provide a window into students’ thinking and reveal confusion or misunderstandings.
 - Administer a short pop quiz requiring students to demonstrate their understanding of an economic concept.
 - Arrange for peers to check each others’ understanding by pairing up to explain an economic concept to another student. Follow this by asking students for a show of hands to report how well they thought they explained, and how well they (honestly) thought their partner explained the concept. If this check reveals a knowledge gap or misunderstanding, conduct a short whole-class discussion or mini-lecture to consolidate understanding of the idea or concept.

Project Logs provide a structured way of assessing student understanding and are included in *PBE* units at significant points during the project. Teachers may have students record many things in a Project Log or journal, including notes on the process of learning, comments on how well they or their groups are working, or reflections on content-related topics. In this project, the prompts we have provided for Project Log entries require students to write a short, concise answer demonstrating their understanding of specific economic concepts, which are pointed out in the *Step-by-Step Teaching Guide* in Section III. Teachers can develop more Project Log prompts if they wish. Project Logs provide for individual accountability for learning the material, and allow the teacher to assess the understanding of each student when students work in groups.

Project Log entries *must be checked soon after they are written* if they are to be used effectively as a diagnostic tool. The teacher needs to find out what students do and do not know in order to plan the next day’s instruction. Apart from skimming them all, one way to do this quickly is to select a small number of representative samples from a range of students in the class. Or, students could be asked to raise their hands according to how well their entries — or their peer’s if they have swapped and read each other’s logs — matched the criteria provided.

Once Project Log entries have been reviewed to assess the degree to which individual students understand the conceptual material being addressed, teachers can plan further instructional actions such as:

- Talking with the class about the concepts in question by giving another mini-lecture
 - Talking with certain students or groups to address their misconceptions and misunderstandings
 - Giving additional textbook reading assignments, and/or directing students to online resources and explanations
 - Arranging peer teaching between students who are confused about the concept and those who have a solid understanding of it.
- **Presentation and Critique of Answers to Driving Question:** All *PBE* Units include the preparation of some sort of tangible product and/or performance to communicate an answer to the Driving Question — essentially, the solution a group has developed to the problem posed in the project scenario. Students will need guidance in the preparation of these products, as well as the opportunity to practice and receive feedback on their work as much as possible from their peers and teacher. After students' solutions have been presented, the class should compare and discuss them, as explained in the debrief phase of each unit.

Oral presentations to the class or a panel are a valuable component of many *PBE* units. As teachers know well, you're often not really sure if you understand something until you explain it to others. However, managing oral presentations well presents several challenges. Student groups need time to prepare and practice. The expectations for a good oral presentation should be made very clear, including presentation techniques and proper attire, posture, attitude, and group member participation. The rubrics accompanying each unit provide guidance to students on the use of content knowledge as well as oral presentation skills.

To help ensure proper participation by all group members, experienced teachers use several strategies. One is to explain that everyone will be held responsible for understanding all parts of an oral presentation and the visual aides that accompany it — and the rubric and grading criteria will reflect this goal. In addition, groups could be informed that even if they have decided in advance who will say what during the formal part of a presentation, *anyone* may be asked a question about *any part* of the presentation. Or, a teacher could tell students they will be picked at random just before the presentation to deliver various parts of it, thereby putting all group members on notice that they all need to be prepared to fully participate.

On the day of presentations, if the number of groups is not too large, there may be time for each group to make a presentation. However, a potential problem with this approach is that groups tend to repeat themselves, and by the time the fourth or fifth group has made its presentation, there is very little new left to say or very few new questions to ask the group. Also, students in groups presenting nearer the end may have an advantage by hearing previous presentations. This can be avoided if it is possible to send the rest of the class to the library or another room, so each group can present only to the teacher or panel — or have presenting groups go to another location. If all students need to remain together, give student audience members a task. Have them listen to other presentations and make notes of good points made and good answers to questions, as well as how they might have done it differently. Some classes may be ready to assess their peers' performance, using a rubric or other set of criteria while they observe and listen.

Maximizing the Effectiveness of Project Based Teaching

- **Managing Small Group Work:** Although the problems posed in project scenarios can be resolved entirely by individuals or entirely through whole-class effort, the Buck Institute for Education believes that Project Based Learning is most effective when students are required to work in small groups. Consequently, all *PBE* unit scenarios place students in the role of a team with three to six members. This gives students the opportunity to discuss their ideas and questions with peers and develops the skills of stating a position, listening to others' positions, respectfully disagreeing with others, and collaborating and compromising.

There is no always-applicable guidance for forming groups, and teachers will have to think about their students and decide who works well together. Generally, we encourage teachers to include students with different interests and abilities in the group so that a range of talents and skills can be applied to the project. And, it is generally NOT a good idea for students to choose their own groups based on friendship alone.

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Coaching and monitoring groups is important. Most groups will need some assistance maintaining a task focus. Groups may also need help maintaining a positive attitude or dealing with group members who are not carrying their weight. Although PBL is predicated on students taking charge of their own learning, teachers need to monitor this process continually, and pull groups into impromptu conferences when their process bogs down.

- **Communicating Standards of Excellence:** Rubrics that specify the characteristics of quality work and exemplars of finished products may be found in Section V of each unit and at www.bie.org. Students should be given the rubric mid-way through the project, to guide them as they prepare the required major products and performances. Students should not be given the rubric at the same time they receive the Entry Document at the beginning of the project as part of a “complete packet of materials” for the whole unit. They need some time to define for themselves what they have to learn to resolve the problems posed by the scenario, and receiving the rubric or other materials too soon short-circuits that process.
- **Practicing 21st Century Skills:** To meet the challenges of the changing economy in the U.S. and across the world, and become participating citizens in a democracy, students need to learn more than basic skills and acquire subject-area knowledge. Accordingly, all *PBE* units provide opportunities for students to learn and practice 21st century skills such as collaboration (e.g., working well with others, sharing resources, arriving at consensus), critical thinking (e.g., gathering relevant information, generating and evaluating solutions to problems), and communication (e.g., discussing ideas, writing, making an oral presentation, using technology). Teachers can discuss, teach, and even assess these skills before, during, and at the end of every project. For rubrics for assessing 21st century skills, visit www.bie.org.
- **Establishing Group and Individually-Based Grading Procedures:** As students usually work together to create the products and/or performance that culminate a project, a teacher may need to assign a single grade for that product, given to all students working in the group. Of course, however, some students — like some adults — will become freeloaders and allow others to do their work for them. Self-reports, combined with group self-evaluation and group leader reports, can provide some information on how much each student may have worked, but not how much each has learned. Students will take more responsibility for their learning, and learn more, if they know their economics content understanding will be assessed individually, so let them know the group product is not the only component of their grade. Instead of relying on one speaker to make a presentation, they should be asked to divide up the task — and be ready for questions about *any* part of it, not just the part they did. But since time is usually short, questioning students during oral presentations can only be a partial assessment strategy.

Consequently, BIE provides multiple choice tests that can be used to assess individual student understanding at the conclusion each *PBE* unit. Additionally or alternatively, a teacher could require students to turn in individual written assignments or take a short-answer/short-essay test. Teachers will have to work out what is most appropriate for their own grading system, but the fundamental idea holds: Make sure to assess students individually on their content knowledge, in addition to any group assessment you conduct.

- **Solving a Problem with Several Possible “Right Answers”:** Part of what engages students in Project Based Learning is knowing that they can make choices and are not simply “doing what the teacher wants.” All *PBE* unit scenarios are built around problems for which there can be multiple reasonable solutions. There are also solutions which are clearly wrong; not *every* solution will work. We provide guidance on reasonable and unreasonable solutions for each unit in the *Step-by-Step Teaching Guide* in Section III.
- **Staying Within the Project Scenario:** Since the scenarios are hypothetical anyway, students often want to add details, modify what is known or otherwise *change* the scenario so that it is easier to resolve the problem presented. Such creativity will sabotage the core purpose of the project — it has been carefully developed as a vehicle to teach specific economics content.

All *Project Based Economics* units have been developed in close consultation with US high school teachers and have been tested in their classrooms and revised based on their feedback to ensure that the project, although enjoyed by most students, does not become merely a “fun activity.” The project has been created to achieve a serious instructional purpose, and deviating from the project scenario’s story line tends to focus students’ attention on irrelevant or less important learning objectives.

- **Working with English Language Learners:** Students who are learning to speak, read, and write English can benefit greatly from Project Based Learning, but special scaffolding may be necessary. They may need more time to complete tasks, more vocabulary-building, and more peer-to-peer support. Some of the authentic-sounding documents presented in *PBE* scenarios may contain jargon, slang, or cultural references that will need to be explained. When forming small groups, care should be taken to assign students learning English to teams with supportive and skilled members. Finally, oral presentations may present special challenges — ELL students may be allowed to participate to a lesser extent than other group members, and/or be given questions to be answered later in writing rather than “on the spot.”

Teaching Matildaville

Sequence of the Unit

Like the other BIE *Project Based Economics* units, students complete **Matildaville** by following a standard set of activities in a proscribed order. But within these activities, there will be variation in the timing and in the way students complete them. The sequence of instructional activities is described below. This sequence is logical, and is based upon extensive pilot testing in high school economics classrooms. It is also informed by research into effective instruction. Although changes may be necessary to meet time constraints, address the needs of specific student populations, or include additional instructional materials and learning opportunities, we strongly encourage teachers to adhere to the sequence of activities as closely as possible — at least during the first several times **Matildaville** is taught. The underlined phrases are cross-referenced and discussed in more detail in the following section, the *Step-by-Step Teaching Guide*.

Pre-Project Planning

0. Teacher **prepares** for successful project implementation.

Launching the Project

1. Students receive Entry Document, the **memo from Fred Gonzenbach**, and discuss it as a whole class.

Framing the Inquiry

2. Students develop **initial “know” list** with the teacher (whole-class discussion).
3. Students develop **initial Driving Question** with the teacher (whole-class discussion).
4. Students develop **initial “need to know” list** with the teacher (whole-class discussion).

Problem-Solving and Learning Activities

5. Students form small groups, receive **second memo and list of entities** and discuss the pros and cons of each (in small groups).
6. Students **revise know/need to know list** with the teacher (whole-class discussion).
7. Teacher provides **clarifying lesson # 1** on multipliers.
8. Students individually write **first Project Log entry**.

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9. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
10. Students receive Criteria for Evaluating Entities **table**, and begin making choices (in small groups).
11. Teacher **reviews** Criteria for Evaluating Entities **table** by discussing it as a whole class.
12. Students receive **memo from Mayor John Okada** and review it with the teacher (whole-class discussion).
13. Students **revise know/need to know list and Driving Question** with the teacher (whole class discussion).
14. Teacher provides **clarifying lesson # 2** on investment, growth, #38; interest rates.
15. Students individually write **second Project Log entry**.
16. Teacher **reviews individual Project Log entries** to assess understanding of economic concepts.
17. Students **finalize know/need to know list** (whole-class discussion).
18. Teacher **shares supplied rubric with students** to guide their work.

Presentation, Assessment, and Debrief

19. Students **decide upon recommendations and write report** (in small groups).
20. Students **share and discuss recommendations** (whole-class discussion).
21. Teacher **uses supplied rubric to assess reports**.
22. Teacher conducts **debrief to clarify and consolidate** students' understanding of key economic concepts (as necessary).
23. Teacher manages **student reflection** on the 21st century skills practiced, and the process of learning in PBL.
24. Teacher uses supplied **multiple-choice test** to assess individual students' knowledge of key economic concepts.
25. Teacher makes **notes on adjustments to the unit** to improve student learning for the next time the unit is taught.

Step-by-Step Teaching Guide

Each of the above instructional activities is discussed in more depth below, with tips for successful classroom implementation.

Pre-Project Planning

0. **Teacher prepares for successful project implementation.**

There are a number of issues that must be considered before embarking on a project with students. These include:

- How much time will be devoted to the project?
- What economics content resources need to be prepared in advance (textbooks, articles, websites, etc.)?
- Do all students have the skills they need to tackle the project — including basic literacy skills as well as the ability to work in teams, make presentations, and conduct research? If not, is it necessary to pre-teach some of these skills, make sure students who need it have adequate support, or deal with these challenges in other ways?
- How will student groups be formed? (*See comments in Section II*)
- How will groups report on their progress and be held accountable? Do report forms or other tools need to be developed?
- Is it necessary to arrange access to the library/media center or computer lab?
- Do parents or administrators need to be informed about the process of Project Based Learning and be assured that time spent on the project is focused on standards-specific learning goals?

In addition to considering the above issues, be sure student handouts and clarifying lesson/minilecture materials are ready — or at least underway.

Launching the Project

1. **Students receive Entry Document, the memo from Fred Gonzenbach, and discuss it as a whole class.**

The memo from Fred Gonzenbach may be found in Section IV, *Student Materials*.

Have one or more students read aloud the Entry Document while the whole class focuses on it.

The memo can be projected so it can be read by the whole class. Alternatively, copies of the memo can be duplicated and passed out to students, or viewed online as an email or document posted to a website.

Potential Hurdle: As this memo sets up the scenario and the problem to be solved, it is essential that the entire class be able to read and comprehend the text. If necessary, employ the same literacy-building strategies you would normally use for this kind of reading material.

Synopsis of memo:

The memo is sent by Fred Gonzenbach, Director of Matildaville’s Community Economic Development Agency, to his team of economic analysts. This memo tells students that they are to select the entities to be developed on property bequeathed to the city by a wealthy benefactor, Mary O’Leary. The analysts are told to consider economic potential but also to abide by Mrs. O’Leary’s wish to provide the city with cultural and leisure amenities.

Economics Content Note: Because the entry document does not focus exclusively on economic considerations, students are free to choose entities based on a very general set of guidelines at this point in the project. This initial focus on non-economic considerations is intentional — it sets up a sudden need to emphasize economics when the city faces a financial crisis.

Framing the Inquiry

2. Students develop the initial “know” list with the teacher (whole-class discussion).

Students must now assess what they already know about the problem posed in the Entry Document. This should be done as a whole class by creating a “What Do We Know?” list on chart paper, an overhead transparency, or a computer projector. Ask students to carefully review the Entry Document and offer items for the list, making sure *to only record what is in the text, not what might be inferred*. Students should be coached to identify all of the information that the Entry Document provides. They should conclude that this information is insufficient to solve the problem, and they need to know (learn) additional things.

Example of Initial Know List

What do we know?

- Mrs. O’Leary died and left us 96 acres
- The land was her grandfather’s and his mansion was never rebuilt
- Each entity can be developed in 1-2 years
- City population is about 250,000, the area is 1 million
- We want the city to be thriving and well-rounded
- Land cannot be sold but can be left undeveloped
- Fred Gonzenbach is our boss and sent us this memo
- We don’t have to worry about the impact of development on parking, or traffic
- Regina Banks is the city’s treasurer
- The city has lots of money
- We can choose any combination of entities
- Wealthy and middle class people want different things
- No entities can be added
- Mrs. O’Leary was interested in the community’s development of arts, leisure, education, music, #38; theatre
- Land is near central business district
- Land use must reflect Mrs. O’Leary’s interests
- Must consider potential for cash today, initial cash outlays required, benefits and costs in the near future, and potential for investment
- Environmental impact report done

At this point, do not ask about solutions, as this might negate or offset information gathering, which is the most important part of the problem-solving process right now.

3. Students develop the initial Driving Question with the teacher (whole-class discussion).

After students have discussed the memo from Fred Gonzenbach, and you are satisfied that students understand it, lead students in drafting an initial Driving Question. This is generally done as a whole-class discussion. A Driving Question is a succinct declaration of the general problem students are to solve. In PBE, it takes the following form:

How can we, as... **[the role(s) being assumed by the students]**, do... **[the specific task(s) students must complete]**, so that... **[the specific result or goal(s) to be accomplished]**.

The initial Driving Question may be quite different from the Driving Question that will emerge as students think about and work on the problem. This is to be expected. The Driving Question generally evolves as students gain more insight and knowledge into the problem and its underlying issues. The initial Question may look something like:

How can we, as **economic analysts**, develop a **written report recommending entities for Mrs. O’Leary’s land**, so that **her wishes are followed and Matildaville continues to be a good place to live for all its residents?**

At this point, it is fine to keep the Driving Question ill-defined. It is not necessary for the Driving Question to contain economic terms or, if it does, use the economic terms correctly. The Driving Question will become more refined as students learn more, and as new developments in the scenario unfold.

4. Students develop the initial need to know list with the teacher (whole-class discussion).

The next step in the problem-solving process is to coach students to identify information they need to know in order to answer the Driving Question. Again, guiding students to pay close attention to all parts of the memo, create a “What Do We Need to Know?” list. If students are missing a key piece of information about the scenario, the content, or their task, ask questions to elicit items for the list. This is critical because everything students are taught in the unit must spring from this list. At this point in the problem-solving process, students will probably list things that they actually do *not* need to know. Allow students to do so. The class will return to the know/need to know list again later, having learned more about what they need to know to solve the problem, and should recognize irrelevant concerns at that time. A core part of the process of Project Based Learning is to distinguish what information is and is not necessary to successfully answer the Driving Question. As much as possible, encourage students to identify irrelevant information on their own.

Although each class generally produces a unique know/need to know list, an example of the type of items that might appear on the list follows.

Example of Initial Need to Know List

What do we need to know?

- What is an entity?
- What is an economic analyst?
- How big is an acre?
- What happened to Mrs. O’Leary’s grandfather’s mansion?
- What is a “thriving and well-rounded community”?
- Who makes the final decision?
- How many acres does each entity use?
- What are the entities?
- Is there any money for development?
- Who will manage the entities?
- Will it cost the city money to develop the land?

- What is “investment”?
- What goes into the report (format, criteria, pages, and visuals)?
- Are there any special interest groups?
- What are the demographics of the community?
- What is best for the community?
- What is the “natural rate of unemployment”?
- Did Mrs. O’Leary give us any money?
- Which state is the city in?
- What does “cash outlays required” mean?

Problem-Solving and Learning Activities

5. **Students form small groups, receive second memo and list of entities and discuss the pros and cons of each (in small groups).**

The second memo and list of entities may be found in Section IV, Student Materials.

The second memo and list of entities provides several vital pieces of information that students will ultimately use in selecting entities. First, the memo and list seeds the economic terms and concepts that students will use in economic decision making. Second, the list provides a description of each entity. Third, the list provides a synopsis of benefits (pros) and costs (cons) that are associated with each entity. This information ultimately allows the students to weigh the tradeoffs between cash today and investments in the future. Finally, the list provides the exact acreage that each entity will consume.

Form students into small groups of three or four, each of which is a team of economic analysts. Distribute copies of the list of entities, either one to each student or one or two to each group. Have students read over and discuss the list in their groups, noting which uses for the O’Leary land seem most appealing and what further questions they have. After students have had some time to discuss the list in their groups, discuss the list as a whole class and have student groups share their questions. Some questions may be answered right away (e.g., “What is a high-rise building?”) and others may be added to the “Need to Know” list.

Potential Hurdle: Students may want to know more about the economic benefits or drawbacks of various entities. They might also say that real economic analysts would have more specific figures to work with, which is sometimes true. Tell them that this is only a preliminary review of the list, and a more detailed economic review could come later. Also, remind students that sometimes in the real world decisions have to be made without certainty. Either information is missing, as it is in this scenario, or it may be inaccurate or contradictory. Students should realize that, in absence of reliable, accurate data, decisions must be made using limited information but grounded in economic principles.

6. **Students revise know/need to know list with the teacher (whole-class discussion).**

Return to the know/need to know list and review it with students, checking off items that are now “known” and adding any new questions.

What else do we know?

- A citizen’s task force made a list of entities, with pros and cons
- Members of Mrs. O’Leary’s family were on the task force
- The entities require different acreage
- Some entities will cost the city a lot of money
- Some entities will help Matildaville grow
- Some entities will not locate next to others
- All the permits, traffic issues, environmental issues have been taken care of already
- The Mayor has a political interest in the stadium

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- Some entities will bring in money, some will not

What else do we need to know?

- What do Matildaville’s citizens like to do?
- What does the city need most?
- What are bonds?
- Why is it bad to increase our debt?
- Is gambling considered a leisure activity to Mrs. O’Leary?
- Can undeveloped land ever be developed?
- Why is the community college so big?
- What is the “multiplier effect”?
- Why should we build a medical research center?
- How much are citizens willing to pay for the museum?
- What does “costs must be borne” mean?
- How much are the matching funds?
- What would happen if we didn’t provide housing for poor people?

7. Teacher provides clarifying lesson # 1 on multipliers.

Note that this lesson will help answer students’ questions on the “Need to Know” list about the economic effects of various entities on the community and about the multiplier effect. This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: It is important that students start to see the entities’ economic potential and understand what happens in a city with an influx or outflow of money. This can be accomplished using the concept of a multiplier. Students should be able to see how increases/decreases in a city’s income cause a change reaction in spending that can either stimulate economic growth (with an increase in income) or send a city into a recession (with a decrease in income). By the end of the lesson, students should be able to define a multiplier, understand how to compute it, and understand its importance for localities.

8. Students individually write first Project Log entry, an answer to the following question:

How does the multiplier effect trigger a large change in economic activity in a city, with only a small change in spending?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

9. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Log entries, see “Formative Assessments” in Section II, Project Based Learning and Project Based Teaching.

Economics Content Note: The Project Log should be reviewed to determine if students understand how the multiplier operates. Students should be able to illustrate how a relatively small increase in spending can create a large increase in growth through the multiplier effect.

10. Students receive Criteria for Evaluating Entities table, and begin making choices (in small groups).

The Criteria for Evaluating Entities table may be found in Section IV, Student Materials.

Give students a copy of the table — or one per pair, if you wish — and review it with the whole class before students begin their discussion. Point out the note on top from Fred Gonzenbach, asking his economic analysts to complete the table to help him understand their decision. Show students how the table is organized and explain what each column heading means:

- ***Initial cash outlays required by the city*** = Will it cost the city money now to build or finance the construction of an entity?
- ***Short-term cash revenue to city*** = Can the city collect money right away, before or as soon as an entity begins operation?
- ***Costs borne by the city in future*** = Will the city have to spend money on this entity in the years ahead?
- ***Future economic rewards*** = Will the city gain economic benefits in the future from its investment?
- ***Benefits to city in future*** = Will there be additional benefits to the city, such as greater prestige, employment and leisure opportunities, greater satisfaction about itself?
- ***Multiplier effect on income or employment*** = Will the entity provide jobs or cause a “chain reaction” leading to more spending on goods and services?
- ***Conflicting with other entities*** = Will other entities refuse to locate nearby?
- ***Conflicting with Mrs. O’Leary’s wishes*** = Is the entity going to enrich the community as Mrs. O’Leary (and her living relatives) wanted?

Allow students enough time to work in their groups to complete the table. To save time, you may “jigsaw” this activity so that different groups complete different rows of the table, focusing on only a few entities. Or, you may assign the criteria table as homework.

11. Teacher reviews Criteria for Evaluating Entities table by discussing it as a whole class.

A Teacher’s Answer Key to the Criteria for Evaluating Entities table may be found in Section V, Teacher Materials.

After students have had time to complete the table, have them share their ideas and discuss it as a whole class. This table should generate much debate and discussion among students as to what is a benefit, what is a cost, and what entities adhere to Ms. O’Leary’s wishes (e.g. “Since ThetaMax is a factory, does it fit with her wishes?”).

Students should be coached to see that the evaluation of benefits and costs is subjective. Note that, for some categories and some entities, the answer is debatable. So many unknowns exist that there are no right answers. Instead, students must be coached to see that they should be able to justify their assumptions and benefit/cost assessments (e.g. “Can you convince your boss, Fred Gonzenbach, that Mrs. O’Leary would think ThetaMax will make Matildaville a community rich in music, art, theater, education, and leisure activities?”)

Economics Content Note: It is sometimes difficult for students to identify the economic benefits and costs of each entity. Students must be coached to see the elements necessary to make economic decisions so that they can eventually select entities that make for good investments. For example, the income that ThetaMax generates today counts more heavily than the income that it doesn’t generate in the future because income today can be invested to produce more dollars in the future.

12. Students receive the memo from Mayor John Okada and review it with the teacher (whole-class discussion).

The memo from Mayor John Okada may be found in Section IV, Student Materials.

Provide each student or pair with a copy of the memo, or display it so the class can follow along while it is read aloud.

This memo presents students with a “twist” in the scenario that changes the nature of the problem. The mayor informs his economic analysts that a financial disaster has hit Matildaville. Poor investment choices by the now-former City Treasurer have caused the city to go into huge debt. Now students must narrow their economic focus,

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instead of choosing entities that benefit all citizens and enrich the community as Mrs. O’Leary wished. Matildaville needs to decide how to use the vacant land to meet on-going expenses, pay off debt, and invest in economic growth.

13. Students revise know/need to know list and **Driving Question with the teacher (whole-class discussion).**

The memo from the mayor will generate new items for the know/need to know list, so revise it now. The Driving Question also will need to be revised, since the problem has changed.

What else do we know?

- The city is in a financial crisis
- City Treasurer Regina Banks has resigned
- We must invest for the future
- We need cash immediately
- We must pay back debt — possibly \$160 million
- The O’Leary land can help the situation
- We need to write a report so the Mayor can make a speech
- It will take at least five years to recover
- Interest on city bonds will rise
- The city’s ability to borrow funds is limited

What else do we need to know?

- What do interest rates have to do with this problem?
- How does this financial crisis impact our development plan for the land?
- What were the bad investments?
- What is a “highly leveraged investment”?
- What is “bankruptcy”?
- How fast will each entity generate cash?
- How much revenue does the city need to meet ongoing expenses?
- How much do we expect interest to increase?
- How long and in what form should the report be?

The revised (and probably the final) Driving Question should be something like:

How can we, as **economic policy analysts**, create **an investment strategy for the O’Leary land**, so that **Matildaville can pay its bills today, recover its financial losses, and make investments that will help meet the city’s economic needs?**

Potential Hurdle: Students may want more specific information about each entity. How much money will it bring in? How much will it cost to operate? How long will it generate income? How much are the matching funds? Coach students to see that this information will not be forthcoming, consistent with the way that decision making often occurs in the “real world.” We constantly must make decisions under uncertainty. We seldom know what the future will bring. If a crisis arises, we may be forced to take action before all of the information is available.

14. Teacher provides clarifying lesson # 2 on investment and growth.

Note that this lesson will further help answer students’ questions on the “Need to Know” list about which entities have the most potential for investment and growth.

This lesson can be provided to students using a combination of mini-lectures and selections from a textbook and other print and online resources, some of which may be assigned as homework. See *Economics Review* in Section V for background information for this lesson.

Economics Content Note: It is important that students start to see the need for the city to weigh the need for cash today with the need to continue to invest in Matildaville’s future to keep it economically healthy. Students must therefore be able to explain the tradeoffs between using resources for consumption today and using resources to invest in the future and how interest rates determine the dollars invested. For this understanding to be complete students must be able to define investment, rate of return, and interest. They should also be able to demonstrate how interest rates affect present and future consumption, and explain the relationship between investment, productivity, and economic growth.

Coach students to see that interest rates play a dual role in investment decision making. Perhaps most important for this problem is their measure as the price of loanable funds (i.e. the price the city has to pay on bonds to borrow money). This interest rate determines the city’s ability to finance capital investments. As Matildaville’s credit rating falls with the financial crisis, the price that it will have to pay for financing investments will increase. (No one wants to loan money to someone who defaults on payments unless they are compensated nicely for the risk that they are taking!). As such, the interest rate that the city will have to pay on bonds to finance new construction (for example) will increase. This, in turn, will decrease the resources that the city can devote to investing. This relationship between interest rate and investments represents the city’s supply curve for investments.

Interest rates also allocate resources between consumption today and investment in the future.

Tradeoffs exist between 1) using resources to invest in future productivity and economic growth and 2) using resources to provide cash, jobs, and income today. The higher the interest rate (as it measures the rate of return on the investment), the more resources the city of Matildaville will devote to future investments. This relationship between interest rate and investments represents the city’s demand curve for investments.

15. Students individually write second Project Log entry, answering the following question:

How does generating revenue for Matildaville today inhibit its potential economic growth?

Project Log entries do not have to be long, but they do need to be completed for Project Based Learning to be most effective. They may be assigned either as in-class tasks or as homework.

16. Teacher reviews individual Project Log entries to assess understanding of economic concepts.

For tips on reviewing Project Log entries, see “Formative Assessments” in Section II, Project Based Learning and Project Based Teaching.

Economics Content Note: The Project Log entries should be reviewed to determine if students understand how investing in the future may decrease consumption (or revenue for a city) today, but it will increase future economic growth. Project Log entries should also be checked to make sure that students understand the role that interest plays in investment decisions.

17. Students finalize know/need to know list (whole-class discussion).

Return to the know/need to know list at this point and check to see if all important questions have been or can be answered. Coach students to see which items on the list may in fact not be relevant to solving the problem. If any key questions remain on the need to know list, answer them or ask students how they can find answers — or remind them that they have to make a decision without knowing everything.

Review the Driving Question one final time, to be sure it still accurate.

18. Teacher shares supplied rubric with students to guide their work.

The rubric for the report may be found in “Assessment Tools” in Section V, Teacher Materials.

Give a copy of the rubric to each student, or display it so every student can read it. Discuss the rubric with students to be sure they understand that they will be assessed primarily on their knowledge of economics. Their writing skills,

while important, are given less weight on the rubric. If you are altering the rubric's point scheme to conform to your own grading system, be sure to maintain the emphasis on knowledge of economics.

Potential Hurdle: Students are likely to ask how long and in what form the report should be. We have intentionally not specified this, leaving it up to the teacher to decide based on his or her own particular students. Students could decide for themselves how to do their report. Coach them to see that a report from economic analysts to a city official would be somewhat formal in style and well organized with an introduction, detailed explanations of choices made, and a conclusion that could state next steps and/or questions remaining to be answered. Tables and charts could also be included. At minimum, such a report would be about 500 to 750 words in length.

Presentation, Assessment, and Debrief

18. Students decide upon recommendations and write report (in small groups).

Have students meet in their economic policy analyst teams and allow time for them to discuss their solution to the problem. The report could be written by the team, or in pairs, or you could ask each student to write one individually.

Potential Hurdle: Although students may try to find ways to avoid the problem of scarcity, coach them to see that they cannot expand the number of acres available beyond the 96 acre limit. Also remind them that they cannot select entities that refuse to operate near the recycled materials center or the county jail and corrections facility if either of those is selected. *Do not allow students to alter these constraints.* A true understanding of economics must include the knowledge that constraints exist, under which individuals, firms, and governments must operate. If students increase the number of available acres, they are not acknowledging the constraints that exist with scarcity (of land).

20. Students share and discuss recommendations (whole-class discussion).

After students have written their reports, conduct a whole-class discussion of their solutions to the problem. Have students share their recommendations and their reasoning.

Students' solutions should show the need to balance the need for money today with the need to continue to invest in the city's future. Question students if they try to justify a plan in which all entities yield income for the city today but do not contribute to economic growth. Likewise, point out the danger of selecting too many entities that serve only as investments without providing for the city's funding needs today.

PRESENTATION OPTION: If you wish to extend the project, you could also have student teams make an oral presentation to the mayor (with you playing the role) along with, if you wish, a committee or group of advisors representing various stakeholders in the community. This would allow you to ask questions to further assess students' understanding of economics.

21. Teacher uses supplied rubric to assess reports.

As you read the students' reports, use the rubric to help you note any areas of weakness that reveal incomplete or incorrect understanding of key economic concepts. Clarify these during the debrief to follow.

22. Teacher conducts debrief to clarify and consolidate students' understanding of key economic concepts (as necessary).

It is critical that the debrief phase of the project not be ignored. This is the time when students, as a whole class, reflect on and receive feedback on both the economic content of the project and the process of solving the problem presented in the scenario. The debrief is in two stages; the first focuses on economics content, and the second focuses on the process of learning in PBL.

Begin the content-focused part of the debrief by discussing how the project helped students better understand economics. The discussion could be guided by questions such as:

- After listening to other students' solutions to the problem presented in the scenario, is there anything that you think you left out or would have done differently?
- What new ideas or economic concepts did you learn in this project?
- What economic concepts do you still not understand?

The economics content-focused debrief is a vital opportunity for clarifying any remaining conceptual misunderstandings evident in student work, or correcting inaccurate statements made during presentations.

Economics Content Note: Students should see that any investment strategy will contain tradeoffs and opportunity costs, so emphasize the following:

- Entities chosen to operate on the O'Leary land may bring income today, but at the cost of allowing other entities to operate that will provide investments for future economic growth. A tradeoff exists between debt undertaken today and economic growth in the future. (i.e., consumption today and consumption later). This tradeoff helps define investment: bearing of costs today (i.e. giving up consumption today by incurring debt) for benefits in the future.
- When resources are scarce, a tradeoff exists between providing income and jobs today and increasing the productivity of resources (through investments) and increasing income of citizens of Matildaville in the future.
- Interest rates play a role in allocating resources between present consumption and investments for the future. The higher the interest rate, the more money it will cost the city to borrow to invest in the future.

23. Teacher manages student reflection on the 21st century skills practiced, and the process of learning in PBL.

Students should have a chance to discuss the process of learning in PBL, and to reflect on the 21st century skills of critical thinking, collaboration, and presentation that they used in the project. This part of the debrief could be done with a series of questions, for example:

- Did you find it to be difficult when there are several possible "right answers" to the Driving Question? Why?
- How does it feel to go through some parts of the project without specific directions, to make some of your own decisions?
- How much do you think you learned in terms of skills like working as a team and making a presentation?

Finally, ask students for feedback on how the project was structured, with questions such as:

- Did you need more resources to help you solve the problem — more lecture time, more readings, more time on the computer?
- Did you need more help in learning how to work together in your group?
- Did you have enough time for each step of the unit?
- Are there any suggestions you would make for improving how the unit is taught?
- Are there any suggestions you would make for improving how the unit is taught?

24. Teacher uses supplied multiple-choice test to assess individual students' knowledge of key economic concepts.

The multiple-choice test for this unit may be found in "Assessment Tools" in Section V, Teacher Materials.

25. Teacher makes notes on adjustments to the unit to improve student learning for the next time the unit is taught.

9.1. MATILDAVILLE

Teachers inevitably recognize how to make **Matildaville** more effective after they have taught it. We encourage you to note these thoughts quickly, so they can review your ideas for improvement the next time you teach the unit.

Teaching Tips

Before a *Project Based Economics* unit is published, it is taught numerous times by experienced high school Economics teachers. We include their advice below.

- As noted in Step 20 above, in addition to or instead of writing a report you could conclude the

unit by having students:

- Create PowerPoint slides and make an oral presentation to the mayor, played by the teacher. This provides an opportunity to question students to be sure they understand the economics behind their decision.
- Create a page for the city of Matildaville's government website, explaining their policy.
- Enact a press conference, with one member of the team playing the role of mayor announcing the policy and the others playing the role of reporters asking questions.
- At first, it may appear that this project could be enhanced by providing students with estimates of economic costs and benefits of each entity (and thereby allow computations of rates of return). However, students could get bogged down with the numbers and lose sight of the economic relationships that underlie the numbers.

Extensions to the Unit

Consider the following economics content-related extensions:

- It is but a short step to equate the local economic growth and level of economic activity in Matildaville to the nation's or a state's economic growth and level of economic activity (i.e., gross domestic product). In fact, in this lesson, you can reintroduce and reinforce many of the macroeconomic issues that are taught in the BIE *Project Based Economics* unit **The President's Dilemma**.

Consider the following ways to integrate other subject areas and build on the project:

- **Geography and Graphic Design/Architectural Drawing:** Have students create a map showing the proposed development on the O'Leary property. However, be sure that the mapping is begun after the investment strategy has been developed, or students may focus on the geographic issues and not the economic investment strategy.
- **Government/Civics:** Link this unit to a government project to help students see how cities work. Students could be asked to participate in local government or community organization meetings.

Speakers from the local city government could be invited to speak on local economic issues.

- **Interdisciplinary, Authentic Projects:** After learning the basic economics by completing **Matildaville**, students could conduct an interdisciplinary project investigating land use in their own community. For example, they could propose ideas for the use of a vacant or converted building or an unused piece of property.

Student Materials

Interoffice MEMORANDUM

To: Economic Analyst Team

From: Fred Gonzenbach, Director, Matildaville Community Economic Development Agency

Subject: Appropriate Entities for Land Development

CC: Mayor's Office

As I explained to you briefly at our staff meeting last week, you have the exciting task of determining what we should do with the property bequeathed to the city by the late Mary O'Leary. Mrs. O'Leary left us 96 acres of undeveloped land near the central business district of Matildaville. This land once surrounded her grandfather's mansion and was never rebuilt. Currently the land is vacant and not producing revenue. City Treasurer Regina Banks has assured us that the city's stable financial situation means we can use this land for whatever purposes we choose.

As the Economic Analyst Team for the Community Economic Development Agency, you will be expected to make a recommendation for the use of the land. I expect your usual analysis of the land's potential, including its ability to generate cash today, requirements of initial cash outlays, benefits and costs that may accrue in the near future, and potential for investment. Remember that the entities eventually occupying this land also must reflect Ms. O'Leary's wish for Matildaville to remain a thriving and well-rounded community. She was committed to maintaining a community rich in music, art, theater, education, and leisure activities.

Our citizens are happy with the current social and economic climate in Matildaville and wish to remain what we are — a medium-sized Midwest city of about 250,000 residents within a surrounding area of about one million people. Our unemployment rate approximates the "natural" rate. While many of our wealthier citizens would like Matildaville to become a more sophisticated city known for the arts and culture, our less fortunate citizens emphasize a wholesome family environment and a strong economy that provides steady employment.

You will soon be receiving a list of entities that could be developed or want to operate on this land. Once you have reviewed the list, please prepare a written report that includes your selections of the appropriate entities for the land. Please explain in your report why you chose each entity.

Interoffice MEMORANDUM

To: Economic Analyst Team

From: Fred Gonzenbach, Director, Matildaville Community Economic Development Agency

Subject: Appropriate Entities for Land Development

Attached is a list of potential entities that have applied for use of land left to us by Mary O'Leary. The list contains comments by the Citizen's Task Force, which included members of the O'Leary family. You also will see the acreage required and cost estimates. As you will see, some entities will contribute to Matildaville's economy today, and some will provide solid investments for the city's future. Some will continue to build our economy through the multiplier effect, and some will help us become a thriving, well-rounded community.

Please note the following:

- The Museum of Modern Art, the professional baseball team, the golf course and the youth center all refuse to locate on the land if it contains either a recycled materials center or a county jail and corrections facility.
- Many of these entities must be financed with city funding to begin operation. However, the usual ways in which this can occur—bonds or taxes—have drawbacks, as you know. Issuing bonds will increase our debt, and the voters and business community will not approve of tax increases.
- The acreage needed by each entity is exact and cannot be altered—nor can other entities be added to the list.
- The city cannot sell the land, but we can leave a portion undeveloped.
- Each entity has a well-developed, pre-approved plan for construction and landscaping and will be given all of the necessary permits.
- Concerns about such things as traffic flow and parking have been taken into consideration when approving plans.
- No additional environmental impact reports are needed for the entities.
- It is estimated that each entity could be at full operating capacity within one to two years, although some have

costs that must be borne by the city before operation can begin.

Potential Entities for O’Leary Land

Statements Summarized and Analyzed by the O’Leary Land Citizen’s Task Force

Matildaville Community College

The college will provide two-year associate degrees as well as licensing programs in nursing, auto mechanics, and computer technology. Once the community college is up and operating, tuition and subsidies from the state and federal governments will offset its costs.

Acres required: 70

Initial cash outlays by the city: high

Pros: The college will bring the community immediate benefits by providing job opportunities for teachers, administrators and staff. Once students graduate, Matildaville will have a well-trained labor force. This resource will attract new businesses to the city, and help existing businesses expand their labor pool. Rates of return on community college degrees are estimated at 15 percent for the city, primarily because graduates of the college will be more productive with additional education.

Cons: The Community College will require initial cash outlays for buildings, equipment, and staffing. In order to raise these funds, the city must increase public debt by issuing bonds.

County Jail and Corrections Facility

The governor has requested acreage to build a new county jail and corrections facility in Matildaville.

Acres required: 18

Initial cash outlays by the city: none

Pros: The jail and corrections facility will generate construction jobs initially and provide hundreds of relatively high-paying jobs as guards, social workers, and service workers once the facility is in operation. All construction, operating, and maintenance expenses will be paid by the state government.

Cons: Many firms and organizations will not want to locate near a jail and corrections facility. Many people will have a “Not In My Back Yard” (NIMBY) attitude, citing concerns for safety and beliefs that such a building would detract from the beauty of downtown Matildaville.

Rose Casino

The Rose Company will build a hotel and a gambling casino to operate for five years.

Acres required: 8

Initial cash outlays by the city: none

Pros: The tax revenues generated for the city will greatly increase its capacity to expand public services and the Rose Company will employ many of Matildaville’s citizens in its hotel and casino. Because the city retains rights to any improvements on property, the hotel and casino buildings will become city property when the Casino closes.

Cons: Unfortunately, the powerful “Citizens Against Gambling (CAG)” interest group will likely convince the state to limit gambling by establishing “gambling free” zones in five years, which will include all medium-sized and large cities. As a result, tax revenues to the city from the casino may accrue only for five years. Because hotels in Matildaville are currently underutilized, there may be little use for the hotel and casino buildings once they are vacated. As a result, the city will bear substantial costs to convert the buildings to alternative uses once they are vacated. Also, Mrs. O’Leary was a member of CAG and shared their belief that casinos are harmful to a community, increasing crime, alcohol and drug abuse, and gambling addiction which often hits lower-income people the hardest.

Museum of Modern Art

Mrs. O’Leary’s fondest wish was to build an internationally-known museum of modern art to house her extensive

collection of paintings and sculptures by several modern masters.

Acres required: 5

Initial cash outlays by the city: moderate to low

Pros: The museum would be a dream come true for art lovers, bringing international recognition to Matildaville, and providing culture to the city's residents. Monies from patrons of the arts would partially offset construction costs, and admission and membership fees will make it possible for the museum to break even once it is operating.

Cons: The city would have to pay for some of the construction costs and would not be paid for use of the land or receive any revenue. Apart from the general feeling of civic pride that their city has major art museum, the majority of Matildaville's residents might not actually visit the museum very often.

Recycled Materials Center

The state would like to build a recycled materials center in Matildaville, which would include special handling of materials such as computers and other electronic devices, appliances, and hazardous materials. The facility would be used by other cities and the entire region.

Acres required: 18

Initial cash outlays by the city: none

Pros: The city will not incur any costs to build and maintain the recycling center and will make \$15 million a year from the state and other communities who use it. Some jobs will be provided, and revenues will accrue over the entire 20 -year period that the facility is in operation.

Cons: Some other potential users of the O'Leary land will not locate near a recycling center. Many citizens will have "NIMBY" attitudes, fearing that the facility would be noisy, foul-smelling, environmentally harmful and generally not an attractive place.

Municipal Golf Course

The plans call for a beautifully landscaped, regulation nine-hole course that will meet the strictest environmental standards.

Acres required: 65

Initial cash outlays by the city: moderate

Pros: A golf course in the center of town will provide leisure activity for residents and appeal to visiting business people and tourists. Once the golf course is built, user fees will offset maintenance costs so that operating expenses will not be borne by the city.

Cons: Public debt would be increased in order to finance the construction of the course. No revenue and few jobs would be provided.

Medical Research Laboratory

The medical laboratory was of primary interest to Mrs. O'Leary and her family. The laboratory would be devoted to researching and developing treatments and cures for major childhood diseases.

Acres required: 18

Initial cash outlays by the city: moderate

Pros: The research lab will bring prestige to the community, provide high-paying jobs to professionals, train individuals for technical positions in health, and increase medical knowledge for society as a whole. Matching federal grants will help finance the building of the laboratory, and research grants will bring additional revenue into the community. Economic benefits in the future are virtually guaranteed because of the growing emphasis on health care in our society.

Cons: The city will have to match the funds provided by the federal government. No direct revenue, beyond tax

revenues, will be gained.

Youth Center and Skateboard Park

The Youth Center will provide middle school and high school age youth with a place to go, appealing activities, a “snack shack” with video games and Internet access, and a homework tutoring center. Adjacent to the center will be a skateboard park and space for live music and other performances, parties and special events.

Acres required: 5

Initial cash outlays by the city: moderate

Pros: Families will be attracted to a city that maintains wholesome activities for young people.

Cons: The Youth Center must be financed with bonds and maintained by revenues generated from payment for activities that it offers. It is expected that these revenues would be enough to sustain a self-supporting Youth Center but would not generate additional money for the city.

Professional Baseball Stadium

One reason for the Mayor’s victory in the last election was his promise to bring a professional baseball team to Matildaville. The mayor cannot reveal the name of the team yet, but he assures us that a team has voiced an interest in coming to Matildaville once the city has a stadium that meets their needs.

Acres required: 18

Initial cash outlays by the city: high

Pros: A professional baseball team would bring recognition and pride to the city, jobs for citizens, and revenue to the city from luxury boxes, concessions, and advertising rights.

Cons: Public debt would be increased in order to finance the building of the stadium. The revenue generated from the luxury boxes is uncertain as it is dependent upon their purchase by high-profile businesses and high-income individuals.

O’Leary Housing Development

Low-cost housing will be developed to provide low-income members of the community, including the elderly, with a safe and attractive place to live. Matildaville currently does not have enough of this kind of housing to meet its needs.

Acres required: 5

Initial cash outlays by the city: none

Pros: Low-income housing is a responsible, good-will effort by the city to help its less fortunate citizens. Construction and maintenance costs will be borne by the federal government. Many of the less-skilled workers who will live there are a source of labor for firms providing service sector jobs.

Cons: Low-income housing projects around the country are plagued with public and individual safety concerns. Their negative public image invokes the NIMBY response in many of Matildaville’s higher income citizens. Should this attitude develop, other properties near the housing may become unattractive to businesses and citizens, and decline in value.

High-rise Office Building

This building would house some of Matildaville’s most financially viable firms and provide space for the growth and development of businesses new to the city. A corporate development firm would pay for the construction of the building.

Acres required: 7

Initial cash outlays by the city: moderate

Pros: By adding new office buildings for lease to its existing supply, the city would reduce the cost of office rentals.

This would attract new businesses to the city and provide more job opportunities for the citizens of Matildaville. Substantial new tax revenues would be generated.

Cons: Because corporations are reluctant to invest in real estate in Matildaville, with the city’s lack of history of business development, the city must subsidize development by offering investors low interest loans.

Preservation Park

The park will preserve the last remaining natural area near the city center, including old groves of trees, part of Squirrel Creek, and animal habitat. The park will provide visitors with a quiet place to visit and picnic, jogging and nature trails, and large play area for children.

Acres required: 18

Initial cash outlays by the city: low

Pros: Many citizens would enjoy visiting the park and families would find it attractive. The park is a high priority for environmentalists who support the Mayor’s reelection. Mrs. O’Leary—echoing her grandfather’s wishes—was a strong supporter of the effort to maintain a natural habitat in the city’s center.

Cons: Costs for building new facilities and maintaining the park must be borne by the city.

ThetaMax Weapons Factory

The ThetaMax Corporation is looking for a temporary site to build a military weaponry research, development, and production facility. It has been awarded several major contracts from the U.S. government and others. ThetaMax soon will build a new, larger factory 50 miles from Matildaville, to replace its old factory just outside city limits.

Acres required: 70

Initial cash outlays by the city: none

Pros: ThetaMax will pay the city \$25 million over five years to use the property. The factory will provide more than a thousand new well-paid skilled and unskilled jobs, and also will allow most of the firm’s current employees to stay in Matildaville.

Cons: Once the factory is vacated after five years, in order to re-use the land the city would need to spend substantial amounts of money to restore the land to an environmentally sound state, since factories of this type use toxic substances.

Leftover Land

Land can be left undeveloped.

Pros: No debt would be incurred because there would be no development costs. As a result, interest rates on bonds would be less likely to rise than they would if the city has to borrow money for development. Land could be saved for future use.

Cons: The opportunity cost of leaving land undeveloped (i.e. not investing in development) can be high. Money is foregone both today and in the future because the land is left idle.

Criteria for Evaluating Entities

TABLE 9.2: This would help me understand the reasons for your decision about how to use the O’Leary land. Answer questions with a “Yes,” “No,” or “Maybe.” — F. Gonzenbach

Entity	Acres	Initial cash outlays required by city?	Short-term cash revenue to city?	Costs borne by city in future?	Future economic re-wards?	Benefits to city in future?	Multiplier effect on income or	Conflicting with other entities?	Conflicting with Mrs. O’Leary’s wishes?
Community College									

9.1. MATILDAVILLE

TABLE 9.2: (continued)

Entity	Acres	Initial cash outlays required by city?	Short-term cash revenue to city?	Costs borne by city in future?	Future economic re-wards?	Benefits to city in future?	Multiplier effect on income or	Conflicting with other entities?	Conflicting with Mrs. O’Leary’s wishes?
County Jail and Correc-tions Facility Rose Casino Museum of Mod-ern Art Recycled Mate-rials Center Municipal Golf Course Medical Re-search Labora-tory Youth Center and Skate-board Park Professional Baseball Stadium O’Leary Housing High-Rise Office Building Preservation Park ThetaMax Weapons Factory									

TABLE 9.2: (continued)

Entity	Acres	Initial cash outlays required by city?	Short-term cash revenue to city?	Costs borne by city in future?	Future economic re-wards?	Benefits to city in future?	Multiplier effect on income or	Conflicting with other entities?	Conflicting with Mrs. O'Leary's wishes?
Leftover land									



From the Desk of the Mayor

To: Economic Analyst Team

From: John Okada, Mayor

Subject: Pending Financial Crisis

CC: Fred Gonzenbach, Director, Matildaville Community Economic Development Agency

As you know, last night I announced the resignation of our City Treasurer, Regina Banks. Her resignation came after it was disclosed that many of the companies with which she had made highly leveraged investments had filed for bankruptcy. The loss of funds cost the city over \$160 million, about 40% of our annual budget. The probability of recouping these funds is extremely small. Repayment of the debt will take at least five years and will require unpleasant sacrifices to get the city back on its feet. Debts of this magnitude will throw the city into a financial crisis, as you well know. Interest rates on city bonds will rise. This will affect our ability to borrow money to finance public sector projects and will send a negative signal to businesses about our economic stability.

During these hard times, we must meet three types of needs. First, unless we raise cash immediately, we will not be able to meet current on-going expenses (e.g. city payrolls, public services). Second, we must pay off this debt in the near future without dramatically increasing the interest that we must pay on our bonds. As you know, an increase in interest rates increases the cost of investment, which would curtail our ability to invest in Matildaville's future and limit economic growth. Third, we must make investments to build a solid economic future for the city. I realize that investing in the future reduces current spending but, unless we improve economic prospects in Matildaville, businesses will leave.

We must develop a sound investment strategy that meets the city's needs immediately. The only potential for this comes from Mary O'Leary's bequest. By carefully planning and developing her land, we can raise the cash necessary to operate the city and build investments that will generate growth in the future. This means that the opportunity cost of not developing her land are high, as you know. We must not waste these opportunities.

I must therefore have a written summary of your investment strategy for developing Mrs. O'Leary's property on my desk ASAP. The plan must include a solid defense of its potential for meeting the economic needs of the city that are outlined above. If your strategy meets my approval, I will use your report as the basis for a press release and a speech to business leaders.

Teacher Materials

Economics Review

9.1. MATILDAVILLE

Multiplier Effect

The “multiplier effect,” or multiplier, causes a curious feature in local and national economies. A 15 million dollar change in investment spending, for example, can lead to an approximately 60 million dollar change in the output-aggregate income level because spending increases in the current period create economic opportunities for even greater spending increases in subsequent periods.

The multiplier is the ratio of a change in the local economy, or Gross Domestic Product (GDP) at the national level, to the initial change in investment spending that, in our example, causes a change in real income for Matildaville. The multiplier is based on the “fact” that the local economy is characterized by repetitive, continuous flows of expenditures and income through which dollars spent by an individual are received as income by another. This means that any change in income or investment spending will cause both consumption and saving to vary in the same direction. It follows that an initial change in the rate of spending in Matildaville will cause a spending chain reaction which, although of diminishing importance at each successive step, will cumulate to increase income in the City. Thus, because of the multiplier *a relatively small change in the investment plans of business (or the City) can trigger a much larger change in income to Matildaville* (or GDP at the national level). The formula is:

$$\text{Multiplier} = \frac{\text{change in real income for the City}}{\text{initial change in spending or investment}}$$

Note that income for the City, in this case, includes both public and private income. It is equivalent to GDP (=C+I+G) at the national level.

For example, in Matildaville the workers employed at the ThetaMax Weapons Factory , the Sluggers, etc., will receive wages for their efforts. Part of this money (approximately .75) will be spent within the City of Matildaville. This spending will generate growth in employment in another sector of the economy, which will generate increased employment and wages and regenerate the cycle. If the marginal propensity to consume (mpc) in Matildaville is .75 , the initial expenditure of income by a business will generate four times that amount (1/1-mpc) in Matildaville’s aggregate income. Remember MPC is the amount that consumers will spend of an additional dollar that they receive.

Note that the reverse is also true. When Banks took money out of Matildaville’s economy, the loss became greater because the decrease in income gives rise to a much larger decrease in economic activity through the multiplier.

Investment, Growth, and Interest Rates

Most of economics begins with the assumption that full employment and full production exists, given the quantity and quality of resources and technology available. Therefore, the level of resources must increase or become more productive, or technological progress must occur before economic growth can occur. We assume that Matildaville was at full employment and full production prior to its financial crisis I discussing the economic problems it faces.

Investment

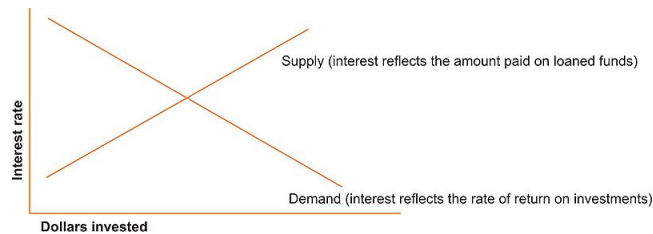
Investment in resources, human or capital, will occur as long as the rate of return on the investment—the benefit—exceeds the cost of the investment. Interest rates, as the price of investment, represent revenue for the individual who is loaning the funds and a cost for the individual (or city!) who is borrowing the funds. This works in much the same way that the price of a good represents revenue to the firm producing it and a cost to the consumer purchasing it.

In terms of investment, tradeoffs exist between 1) using resources to invest in the future thereby increasing productivity and economic growth and 2) using resources to provide cash, jobs, and income today. Interest rates are used to allocate resources between consumption today and investment in the future. As interest rates increase, more resources will be devoted to investments, all else equal, because individuals now have a greater incentive to invest money (i.e., the rate of return on investments has increased). This relationship between interest rates and investments represents the city’s demand curve for investments.

Interest, as it measures the price of loanable funds, determines the ability to finance investments. As the price of obtaining a loan (interest) increases, fewer investments will be made, all else equal, because borrowers now have to

pay more for the money they borrow. This relationship between interest rates and investments represents the city's supply curve for investments.

We can therefore diagram the equilibrium rate of investment within the standard supply and demand framework. The demand for investments decreases as its rate of return (i.e. interest rate) decreases and the supply of loanable funds increases as its return increases.



Economic Growth

For economic growth to occur, we must consider the possibility of investment. That is, “goods for the present” can be traded or invested in “goods for the future”. Capital goods, research and education, and preventive medicine (for example) would increase the quantity and quality of property and human resources, and make resources more productive in the future. By choosing to forgo some consumption today and make these investments, Matildaville can achieve economic growth and increase output in the future. In contrast, a city whose current choice of output places less emphasis on “investment” goods and services and chooses to make larger additions to its current stock of revenue will forego future economic growth. The benefit from such a choice is more consumer goods in the present. The opportunity cost is a greater capacity to productive goods and services in the future.

Interest Rate

The interest rate is an extremely important price in allocating present and future goods and services because it simultaneously affects both the level and composition of investment goods production. An increase in the rate of return (interest earned on investment) will increase investment in resources for future production, and vice versa.

Here's an example. If the expected rate of return on additional physical capital is 14% and the required funds that can be secured for its purchase are at an interest rate of 10% , business will be able, in terms of profit, to borrow and expand (i.e. invest) its capital facilities. The benefits from the investment at a rate of return of 14% exceed the cost of undertaking it at an interest rate of 10% . If the expected rate of return on additional capital is only 8% or if the interest rate is 15% , it will be unprofitable for accumulation of more capital goods (i.e. investment) to occur.

The interest rate allocates money to businesses that are most productive because increased productivity means that the rate of return is higher.

Productivity

Another important consideration in economic growth is increased the productivity of resources. Output from existing resources can be increased with productivity gains. In fact, growth in productivity has been the most important force in growth of our real domestic output and national income in recent years. Increases in the quantity of labor account for only about one-third of the increase in real national income in this century with the remaining two-thirds attributable to raising labor productivity. The latter can be viewed as an investment, since much of the productivity gain has resulted from an *investment in human capital* (e.g. increased education and training), which increases the per unit output (i.e., productivity) from labor.

Private and Public Investments

Investment can be defined as expenditures used to improve resources in the hope they generate additional income. While both private firms and the public sector can use today's resources for investment, corporations have more flexibility in financing investments than does the public sector. Private firms, can finance investments through either the sale of stocks or bonds, while municipalities such as Matildaville are restricted to the sale of bonds.

Private Investment by Corporations

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Private firms use the profit motive to guide investment spending: they invest only when the money invested is expected to make a profitable return. Phrased somewhat differently, the benefits from investments must exceed their cost. Corporations finance their investment activities in three ways. First, a large portion of business activity is financed internally out of undistributed profits. Second, businesses, like individuals, can borrow from financial institutions. Third, common stocks and bonds can be issued.

Stocks and Bonds

A common stock is an ownership share. The household that purchases a stock certificate has the right to vote in the selection of officers in the firm and to share in any declared dividends. In contrast to the ownership value of stocks, a bond purchaser simply lends money to the firm. A bond is merely an IOU in acknowledgment of a loan. In exchange for the loan, the firm promises to pay the bondholder 1) a fixed amount at some specified future date and 2) other fixed amounts — interest payments — every year up to the bond’s maturity date. These characteristics of bonds exist whether the issuer of the bonds is a public entity, like Matildaville, or a private entity, such as a business.

Stocks and bonds differ in important ways. First, the bondholder is not an owner of the entity, but is only a lender. Second, bonds are considered to be less risky than stocks because bondholders have a “legally prior claim” upon business earnings. Dividends cannot be paid to stockholders until all interest payments due to bondholders have been paid. As a result, stockholders do not know how much their dividends will be or how much they might obtain for their stock, should they decide to sell.

Bonds and Interest Rates

The purchase of bonds is not risk free. The market value of the bond may vary over time with the financial health of the business (or city). For example, if a firm or public entity (such as Matildaville) encounters economic misfortunes that raise questions about its financial integrity, the market value of its bonds will fall. If a \$1,000 bond is sold prior to maturity, it may only fetch \$600 or \$700 because of the decline in the probability of repayment.

Changes in interest rates also affect the market prices of bonds. Increases or decreases in the interest rates cause bond prices to fall or increase. For example, if you purchase a \$1,000, 10-year bond today when the interest rate is 10%, you will receive a \$100 fixed interest payment each year. If the interest rate increases to 15%, the bond must now be guaranteed at \$150 fixed annual payments on the \$1,000 bond. This is because no one will be willing to pay \$1,000 for the bond that pays only \$100 of interest income annually when new bonds can be purchased for \$1,000 and yield \$150 of annual income.

Public Investments

While firms generate revenue from the sale of goods and services, governments must find other means to finance production of consumption or investment goods. Cities such as Matildaville often rely on bonds to finance expenditures on investments and tax revenues to finance ongoing expenditures. If government spending on consumption goods (e.g. subsidies for school lunches or cars for government officials) occurs through debt (such as bonds), then paying for consumption today has been shifted to future generations. If government spending on investment (e.g. highways, education, or health) occurs through debt, the economy’s future productivity capacity is increased. In this case, the resources of future generations may not be decreased. Instead, the composition is changed so there is more public capital and less private capital.

This raises a potentially serious problem with the increase of public debt to finance investment (e.g. through the issuance of bonds). The investment in humans or physical capital by public entities, like Matildaville, may well **crowd out** private investment. That is, deficit financing may increase interest rates and reduce investment spending by private firms. If this should happen, future generations would inherit an economy with a smaller productivity capacity and, thus, be faced with a lower standard of living. This occurs because the impact of an increase in public spending falls on those living when it occurs. In a full employment economy, an increase in government spending will orient current consumption away from private (i.e. business produced) goods and services and toward public goods and services.

Case Studies in Public Financing

Orange County—A Case Study in City Bankruptcy

Many of the issues facing Matildaville are similar to the issues faced by Orange County in 1993 when it declared bankruptcy. Because the debt that Orange County accrued forced decisions about investment and growth that parallel those that you must make about Matildaville, we provide background information about the Orange County bankruptcy.

In 1978, California voters passed Proposition 13, which limited the ability of local governments to raise taxes and placed strict limits on property taxes. This severely restricted the ability of local governments to generate revenues. In response, governments convinced the state legislature to reduce the restrictions on investments that local governments could undertake. As a result, local governments were permitted to undertake high-risk, high-interest investments. Once Prop 13 placed severe restrictions on traditional methods of financing local governments, the high-yield investments became an attractive alternative for generating revenues.

The county treasurer in Orange County, Bob Citron, was in charge of the county's investment pool. Citron had a track record of providing high-interest income to his local government investors by borrowing money and investing it in derivatives, inverse floaters, and long-term bonds that paid high yields. He continued his pattern of borrowing more money with borrowed money, and by 1994 Citron had borrowed \$2 for every \$1 on deposit. He took increasing risks in order to raise more interest income for local governments as the state cut tax allocations. Most specifically, as the Federal Reserve Board kept raising interest rates, Citron, who had a hunch that the Fed would lower interest rates at the end of the year, kept buying securities.

By spring 1994 the county had suffered huge losses and did not have the cash to pay back the massive short-term loans to the Wall Street firms from which it had borrowed money. By 1994 county officials realized that Citron had lost about \$1.64 billion in government funds through risky investments. The county did not have enough cash on hand to withstand a run on the money owed to Wall Street investors and local government depositors. As a result they sought and secured Citron's resignation.

County officials tried to sell risky securities. Banks that had loaned Citron money threatened to seize the securities from the county pool that was held as collateral. After the first bank took this action, the county government declared bankruptcy as a way of halting other funds from being seized by Wall Street lenders and local government depositors. As a consequence, funds that had been part of the investment pool were frozen in 29 of the 31 cities in Orange County, all of its school districts, and most of the transportation, water, and sanitation agencies.

During the period immediately after the bankruptcy, county supervisors tried to keep the county government functioning. At the same time, they attempted to limit a financial depletion of the county pool of money, which was vulnerable to further income loss if interest rates rose again. Officials from schools, cities, and special districts sought to assess the damage that the bankruptcy inflicted on their operations. Immediately, the county's credit rating fell to "junk" status.

Quickly, the county government took several immediate steps to stabilize the situation:

- Risky investments were sold, and the loss was stabilized at \$1.64 billion.
- Local governments were allowed to withdraw some of their funds from the pool on an emergency basis.
- County programs received the funding that they needed to operate, and a first round of budget cuts was implemented.

In March 1995, the County Board of Supervisors placed on the ballot a proposal for a half cent sales tax increase as part of the financial recovery plan. The supervisors took this action because an additional \$1 billion in bonds was coming due in the summer and the county had no way to borrow money to repay the bonds. In overwhelming numbers, however, local voters defeated the sales tax increase. The state governor refused to bailout the county and threatened a state takeover. Bond investors agreed to roll over the county's debts for another year in exchange for more interest earnings (i.e. interest rates increased).

By the end of 1995, the county diverted tax funds from other county agencies to the general fund so that the county could borrow the money to pay bondholders and vendors. Local governments that had lost money agreed to wait for resolution of the county's lawsuits against Wall Street firms to be paid back in full. By mid 1996, the county

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government had sold the \$880 million of county bonds at a loss so that it could pay off its debts. The Orange County bankruptcy officially ended on June 12, 1996.

Results of the bankruptcy are far reaching.

- The county government had to take on a large level of long-term debt to resolve its fiscal problems.
- The county's bonds are rated as speculative, meaning that the county pays a high cost for borrowing money (i.e. interest rates on bonds are relatively high).
- Local governments are still owed money from the county pool and remain about \$850 million short.
- Services to the county's poor were cut drastically and never fully restored.
- The local governments are severely limited in their ability to respond to current needs or to plan for the future.

The Oakland Raiders—An Example of Misinformation and Miscalculations in the Public Sector

In 1995, the city of Oakland and the County of Alameda hastily approved a record \$198 million deal to return the Raiders football team to Oakland and to renovate the aging Coliseum stadium. Citing an outdated survey on fan support, politicians argued that sufficient support from fans existed to pay the debt on the bonds issued for the deal by using “personal seat licenses” (PSLs) with which fans can assure their place at the games by paying to reserve a specific seat. On the contrary, the entire deal has been losing money since its inception. Problems include:

- PSLs never gained their predicted popularity. As of 1998, many fans who initially purchased PSLs did not opt to renew their plans.
- As of 1998, the team has yet to have a winning season, making it difficult to sell PSLs and to fill the stadium.
- When the city and county sued the Raiders, the team counter-sued and alleged that Oakland lured them back unfairly.
- In fiscal year 1997-1998, shared payment for debt on the deal cost the city and county \$16 million . The cost for 1998-1999 is expected to be a combined \$21 million , a figure that could escalate when legal cases are settled.

Concept Definitions

The curriculum is designed to teach the following concepts:

Concepts in **boldface** are defined below. Concepts in *italics* are defined elsewhere in the definition list.

Economic Growth The amount by which the stock of *resources* changes.

Income The flow of money that accrues to an individual, group, or firm over some period of time. It may originate from *land* (called *rent*), *labor* (called *wages*), *capital* (called *interest*), or productive resources (called profit). It may also stem from sources outside of the market (e.g. gifts) or it may be in-kind (e.g. company car).

Interest Rates The price of loanable funds, which is usually expressed as annual percentage and measures the yearly *cost* of borrowing. The price paid per dollar borrowed per period of time.

Investment An expenditure, usually on *capital* goods, that involves an initial sacrifice followed by subsequent benefits. Investments can be made by governments (**public investment**) or by private individuals or businesses (**private investment**).

Multiplier The ratio of the change in (the City's) aggregate *income* that results from a change in expenditures.

Nominal Interest Rates The *interest rate* taken at its face value. That is, the *interest rate* expressed in current dollars not adjusted for inflation.

Opportunity Costs (Indirect Costs) The real sacrifice involved in achieving something. The value of the next best opportunity that is foregone in order to achieve a particular thing.

Productivity A measure of average output or real output per unit of input.

Public Debt The total amount owed by the government (to the owners of government securities). It is equal to the sum of the past budget deficits (less budget surpluses).

Real Interest Rates The actual return to *capital*. Because comparing *nominal interest rates* includes a purely monetary component, the value of the rate must be purged of changes in prices to be compared over time. It is the rate obtained after eliminating the element of price change.

Resources *Land, labor, capital*, or entrepreneurs used to produce other things to satisfy humans' wants.

Scarcity A condition where less of something exists than people would like if the good had no *cost*. Scarcity arises because *resources* are limited and therefore cannot accommodate all of our unlimited wants.

Tradeoff An exchange relationship denoting how much of one good (or *resource*) is needed to get another good (or *resource*).

Uncertainty More than one possible outcome to a particular course of action. Although the form of each possible outcome is known, the probability of getting any particular one of the outcomes is not known.

Teachers can also demonstrate the following concepts using this lesson:

Bonds An IOU, in acknowledgment of a loan, whereby the corporation or government promises to pay the holder a fixed amount at some specified future date and other fixed amounts (*interest*) every year up to the bond's maturity date.

Crowding Out When the government borrows money, the associated rise in *interest rates* decreases planned *investment* spending by private firms and individuals. As a result, government expenditures are said to "crowd out" those by private firms.

Present Value The value of a sum (or sums) of money that will be obtained in the future. Money now is worth more than money in the future (*time value of money*), both because of *uncertainty* and because money accrued today could be invested to produce greater sums of money in the future. As a result, today's worth of money that will be obtained in the future must be discounted by a rate of *interest* equivalent to the rate at which it could be invested.

Rate of Return The price earned on an *investment*.

Tax A compulsory transfer of money from individuals, institutions, or groups to the government, which may be based on either wealth or *income* or as a surcharge to prices.

Time Value of Money Because preference is for current as opposed to future consumption, an individual (firm or institution) must be compensated for loss of current consumption. For example, suppose we asked an individual, "If you were to give me \$100 today in exchange for a promise to pay you a sum of money in one year's time, what would that sum of money have to be to compensate you for the loss of the current consumption (without inflation)?" An answer of a dollar value greater than \$100 indicates that the individual has a preference for present consumption because he or she must be compensated for the loss of current consumption. An answer of \$100 indicates that the individual has no preference between present and future consumption. An answer of less than \$100 indicates that the individual has a preference for future consumption.

Assessment Tools

Rubrics

We have provided a rubric for each major product or performance required in this unit. All rubrics may be used as written, or adapted by the teacher to fit particular needs. Rubrics serve two major purposes. First, they provide guidance to students, describing the characteristics of good quality work—and because of this rubrics should be shared with students while they are preparing how to demonstrate what they have learned. Second, rubrics provide teachers and others with a framework for assessment and feedback.

We have divided our rubrics into three levels of quality. If teachers wish to express these levels on a numeric point scale, we suggest that “Exceeds Standards” equals a 4 or 5, “Meets Standards” equals a 3, and “Does Not Meet Standards” equals a 1 or 2. We intentionally did not include a scoring system based on percentages or letter grades, since evaluation and reporting methods vary greatly among teachers. However, we have suggested what we believe to be the proper weight given to each category, with the emphasis on the application of content knowledge.

The rubrics for each unit do not include extensive detail about the qualities of a good oral presentation, or of good writing and other products such as electronic media. A general rubric for any oral presentation to a panel may be found at www.bie.org. Rubrics for writing and other media products may be found in various print resources and websites, or developed by teachers, schools, and districts.

TABLE 9.3: Teacher’s Answer Key to Criteria for Evaluating Entities Table

Entity	Acres	Initial cash outlays required by city?	Shortterm cash revenue to city?	Costs borne by city in future?	Future economic rewards?	Benefits to city in future?	Multiplier effect on income or employment?	Conflicting with other entities?	Conflicting with Mrs. O’Leary’s wishes?
Community70 College		No	No	Yes — increased debt	Yes	Yes — more productive workers	Yes	No	No
County Jail and Corrections Facility	18	No	No	No	Yes	Yes — jobs	Yes	Yes	Yes
Rose Casino	8	No	Yes (taxes)	Maybe	No	Maybe	Yes	No	Maybe
Museum of Modern Art	5	Maybe	No	No	No	Yes — arts to appreciate	Not much	No	No
Recycled Materials Center	18	No	Yes, revenue	No	Yes	Yes — revenue	Yes	Yes	No
Municipal Golf Course	65	Yes	No	No	No	Yes — golfing	Not much	Yes	No

TABLE 9.3: (continued)

Entity	Acres	Initial cash outlays required by city?	Shortterm cash revenue to city?	Costs borne by city in future?	Future economic rewards?	Benefits to city in future?	Multiplier effect on income or employment?	Conflicting with other entities?	Conflicting with Mrs. O'Leary's wishes?
Medical Research Laboratory	18	Yes	No	Yes — increased debt	Yes	Yes — jobs and research monies	Yes	No	No
Youth Center and Skateboard Park	5	Yes	No	Yes	No	Yes — skateboarding	No	Yes	No
Professional Baseball Stadium	18	Yes	No	Maybe	Yes	Yes — jobs	Yes	Yes	No
O'Leary Housing	5	No	No	Maybe (if value of neighbors drops)	No	Yes/No	Not much	Maybe	No
High-Rise Office Building	7	Yes ??	No	No	Yes	Yes — taxes	Yes	No	No
Preservation Park	18	Yes (little)	No	Yes (little)	No	Yes — relaxation	No	No	No
ThetaMax Weapons Factory	70	No	Yes	Yes	Yes (5 years only)	No	Yes	No	Yes
Leftover land		No	No	Opportunity/a costs		Maybe	No	No	No

TABLE 9.4: Rubric for Report on Investment Strategy for Land Development

Component and the Recommended Value	Exceeds Standards (Score 4-5)	Meets Standards (Score 3)	Does Not Meet Standards (Score 1-2)
<p>Definition of the Problem (10%) <i>Key Aspects: (from first memo)</i></p> <ul style="list-style-type: none"> • Fulfill the wishes of Mrs. O’Leary • Meet the needs of the citizens of Matildaville • Create a well-rounded community <p><i>(after memo from mayor)</i></p> <ul style="list-style-type: none"> • Consider the long run and short run costs and benefits of investments • Meet the economic growth needs of Matildaville 	<p>Describes the problem clearly, accurately and completely in all aspects</p> <p>Solution to the problem is completely consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics</p>	<p>Describes the problem clearly and accurately in most key aspects</p> <p>Solution to the problem is generally consistent with the scenario as presented; the parameters of the problem have not been altered and/or facts “made up” to avoid grappling with key aspects of economics</p>	<p>Does not describe the problem clearly, accurately and/or completely in one or more key aspects</p> <p>Solution to the problem is not consistent with the scenario as presented; the parameters of the problem may have been altered and/or facts “made up” to avoid grappling with key aspects of economics</p>
<p>Explanation and Defense of Investment Strategy (75%) <i>Key Points:</i></p> <ul style="list-style-type: none"> • The multiplier effect of decisions made • The effect of interest rates on economic growth and development • Investment potential realized, including the long run and short run costs and benefits of decisions • The need to balance community needs today while ensuring future economic growth and maintaining cash flow 	<p>The investment strategy is explained clearly and defended with plausible, realistic and accurate applications of economic theory, including a detailed discussion of all key points</p>	<p>The investment strategy is explained clearly and defended with plausible, realistic and accurate applications of economic theory, including a discussion of most key points</p>	<p>The investment strategy is not explained clearly; it may be unrealistic or use inaccurate economic theory and/or vocabulary; most or all key points are omitted</p>

TABLE 9.4: (continued)

Component and the Recommended Value	Exceeds Standards (Score 4-5)	Meets Standards (Score 3)	Does Not Meet Standards (Score 1-2)
Quality of Writing (15%)	The report is well organized, with a clear introduction, detailed supporting paragraphs, and an effective conclusion. Writing uses a professional tone, clear and persuasive language, and is free of mechanical and grammatical errors	The report is organized, with an introduction, supporting paragraphs, and a conclusion. Writing uses an appropriate tone, clear language, and is free of significant mechanical and grammatical errors	The report is not well organized, and may be missing a clear introduction, detailed supporting paragraphs, or a conclusion. Writing uses an inappropriate tone, unclear language, and/or has significant mechanical and grammatical errors

Test for Matildaville

Name _____

PLEASE BUBBLE IN YOUR ANSWERS COMPLETELY—LIKE THIS "Bold"

- Which of the following is an example of scarcity in the city of Matildaville?
 - There is not enough land to build all the proposed projects.
 - Wages are so low it is hard to hire workers.
 - Building costs are so high, it will cost a great deal to build the projects.
 - Profit margins for business are low.
- For the city of Matildaville, you evaluated the costs and benefits of different projects. The willingness to give up some benefits in order to receive others is called:
 - tradeoffs
 - scarcity
 - crowding out
 - profit maximization
- Which of the following most accurately describes the economic tradeoffs you faced as a member of the Economic Research #38; Policy Analyst Group for the city of Matildaville?
 - financial cost vs. cultural considerations
 - environmental cost vs. economic value
 - public wishes vs. long term economic growth
 - all of the above
- The mayor of the city of Matildaville is worried about debt of the city because he:
 - does not understand that everyone lives on credit
 - believes it will affect the tax-exempt status of his bonds
 - believes that the city's cost of borrowing will rise with increased debt
 - believes that the city's cost of borrowing will decline with increased debt
- To produce goods and services businesses:
 - combine resources
 - combine costs
 - combine outputs
 - combine efficiencies
- The limit of an economy's potential output is set by:

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- a. the quantity and quality of labor, capital, and natural resources
 - b. business demand for final goods and services
 - c. government regulations and spending
 - d. the amount of money in circulation
7. An *opportunity cost* of a garbage dump in the city of Matildaville is:
- a. the golf course that could have been built on the same property
 - b. the revenue gained from New York using the dump
 - c. the cost of paying workers to pick up garbage
 - d. the cost cleaning up smelly air
8. An interest rate refers to the:
- a. amount of money loaned
 - b. value of money
 - c. level of community interest in public works projects
 - d. cost of borrowing money
9. Economists recommend businesses hire workers who are residents in a city where they work because these workers:
- a. are more reliable than non-residents
 - b. are more likely to spend money in the city than non-residents
 - c. work harder than non-residents because they have pride in their city
 - d. don't contribute to pollution
10. How would an *economist* weigh the importance of the cultural and financial value of new projects?
- a. Cultural values are more important because they determine the quality of our life
 - b. Financial values are more important because they determine the health of the economy
 - c. It depends upon the relative costs and benefits of the project
 - d. Both financial and cultural values are equally important
11. Borrowing to build the city of Matildaville community college would likely:
- a. raise interest rates
 - b. lower interest rates
 - c. keep interest rates the same
 - d. would not involve interest rates
12. Interest rates are a cost of doing business because:
- a. interest rates vary depending on the community support for their project
 - b. interest rates determine the cost of borrowing money
 - c. the greater the interest in the project, the greater the probability of success
 - d. revenue is a function of interest rates
13. When Ms. Grey willed the city of Matildaville 96 acres of land, she:
- a. increased the resources available to the city
 - b. decreased the resources available to the city
 - c. left unaltered the resources and their use
 - d. the effect on resources is unknown
14. If the city of Matildaville decides to construct a community college, this will:
- a. likely cause the number of jobs to increase
 - b. likely cause the number of jobs to decrease
 - c. not affect the number of jobs
 - d. only affect jobs at the community college
15. When a government chooses to build a project, *opportunity costs* are based on:

- a. the economic benefit of the other possible projects
 - b. the cultural values other possible projects provide
 - c. the economic benefit of the most valuable of the other possible projects
 - d. all of the above
16. A local 10 million dollar construction project would be expected to:
- a. increase local aggregate income by more than 10 million dollars
 - b. increase local aggregate income by less than 10 million dollars
 - c. increase local aggregate income by exactly 10 million dollars
 - d. have no effect on local aggregate income
17. Economists expect investment in capital to:
- a. lead to lower future growth
 - b. not have an impact on growth
 - c. lead to higher future growth
 - d. cannot be determined
18. The *opportunity cost* of a new public high school is the:
- a. money cost of hiring teachers for the new school
 - b. cost of constructing the new school at a later date
 - c. change in the annual tax rate to pay for the new schools
 - d. other goods and services that must be given up to build the new school
19. Building the city of Matildaville's community college has:
- a. immediate benefits because people would be hired to build and run the institution
 - b. long term benefits because college graduates they will offer a well-trained labor force
 - c. immediate costs for building the college
 - d. all of the above
20. Using the table below, when investment is 20 and the change in aggregate income is 40 , the multiplier is:
- a. 2
 - b. 3
 - c. 5
 - d. 10

TABLE 9.5:

multiplier	investment	change in aggregate income
6		300
	20	40
3	40	

21. Use the table above to determine the change in aggregate income when the multiplier is 3 and the investment is 40 :
- a. 70
 - b. 95
 - c. 120
 - d. 140
22. Building the baseball stadium in the city of Matildaville would likely have the following effect on the market for loanable funds:
- a. interest rates would fall
 - b. interest rates would rise

- c. corporations would raise their level of investment spending
 - d. the price of the city's bonds would go up
23. Government economic advisors usually take into account the following criteria when making recommendations for new public projects:
- a. the economic benefit of the project
 - b. the opportunity cost of the project
 - c. the impact on business investment
 - d. all of the above
24. Which of the following best describes the possibilities for developing the city of Matildaville?
- a. Different projects require different amounts of land, labor, and capital.
 - b. All projects require increased resources in the long term.
 - c. All projects require reduced resources in the long term.
 - d. All projects require the same amounts of land, labor, and capital.

Test for *Matildaville*

Teacher's Answer Key

1. Which of the following is an example of scarcity in the city of Matildaville?
 - a. **There is not enough land to build all the proposed projects.**
 - b. Wages are so low it is hard to hire workers.
 - c. Building costs are so high, it will cost a great deal to build the projects.
 - d. Profit margins for business are low.
2. For the city of Matildaville, you evaluated the costs and benefits of different projects. The willingness to give up some benefits in order to receive others is called:
 - a. **tradeoffs**
 - b. scarcity
 - c. crowding out
 - d. profit maximization
3. Which of the following most accurately describes the economic tradeoffs you faced as a member of the Economic Research #38; Policy Analyst Group for the city of Matildaville?
 - a. financial cost vs. cultural considerations
 - b. environmental cost vs. economic value
 - c. public wishes vs. long term economic growth
 - d. **all of the above**
4. The mayor of the city of Matildaville is worried about debt of the city because he:
 - a. does not understand that everyone lives on credit
 - b. believes it will affect the tax-exempt status of his bonds
 - c. **believes that the city's cost of borrowing will rise with increased debt**
 - d. believes that the city's cost of borrowing will decline with increased debt
5. To produce goods and services businesses:
 - a. **combine resources**
 - b. combine costs
 - c. combine outputs
 - d. combine efficiencies
6. The limit of an economy's potential output is set by:
 - a. **the quantity and quality of labor, capital, and natural resources**

- b. business demand for final goods and services
 - c. government regulations and spending
 - d. the amount of money in circulation
7. An *opportunity cost* of a garbage dump in the city of Matildaville is:
- a. **the golf course that could have been built on the same property**
 - b. the revenue gained from New York using the dump
 - c. the cost of paying workers to pick up garbage
 - d. the cost cleaning up smelly air
8. An interest rate refers to the:
- a. amount of money loaned
 - b. value of money
 - c. level of community interest in public works projects
 - d. **cost of borrowing money**
9. Economists recommend businesses hire workers who are residents in a city where they work because these workers:
- a. are more reliable than non-residents
 - b. **are more likely to spend money in the city than non-residents**
 - c. work harder than non-residents because they have pride in their city
 - d. don't contribute to pollution
10. How would an *economist* weigh the importance of the cultural and financial value of new projects?
- a. Cultural values are more important because they determine the quality of our life
 - b. Financial values are more important because they determine the health of the economy
 - c. **It depends upon the relative costs and benefits of the project**
 - d. Both financial and cultural values are equally important
11. Borrowing to build the city of Matildaville community college would likely:
- a. **raise interest rates**
 - b. lower interest rates
 - c. keep interest rates the same
 - d. would not involve interest rates
12. Interest rates are a cost of doing business because:
- a. interest rates vary depending on the community support for their project
 - b. **interest rates determine the cost of borrowing money**
 - c. the greater the interest in the project, the greater the probability of success
 - d. revenue is a function of interest rates
13. When Ms. Grey willed the city of Matildaville 96 acres of land, she:
- a. **increased the resources available to the city**
 - b. decreased the resources available to the city
 - c. left unaltered the resources and their use
 - d. the effect on resources is unknown
14. If the city of Matildaville decides to construct a community college, this will:
- a. **likely cause the number of jobs to increase**
 - b. likely cause the number of jobs to decrease
 - c. not affect the number of jobs
 - d. only affect jobs at the community college
15. When a government chooses to build a project, *opportunity costs* are based on:

- a. the economic benefit of the other possible projects
 - b. the cultural values other possible projects provide
 - c. the economic benefit of the most valuable of the other possible projects
 - d. **all of the above**
16. A local 10 million dollar construction project would be expected to:
- a. **increase local aggregate income by more than 10 million dollars**
 - b. increase local aggregate income by less than 10 million dollars
 - c. increase local aggregate income by exactly 10 million dollars
 - d. have no effect on local aggregate income
17. Economists expect investment in capital to:
- a. lead to lower future growth
 - b. not have an impact on growth
 - c. **lead to higher future growth**
 - d. cannot be determined
18. The *opportunity cost* of a new public high school is the:
- a. money cost of hiring teachers for the new school
 - b. cost of constructing the new school at a later date
 - c. change in the annual tax rate to pay for the new schools
 - d. **other goods and services that must be given up to build the new school**
19. Building the city of Matildaville's community college has:
- a. immediate benefits because people would be hired to build and run the institution
 - b. long term benefits because college graduates they will offer a well-trained labor force
 - c. immediate costs for building the college
 - d. **all of the above**
20. Using the table below, when investment is 20 and the change in aggregate income is 40 , the multiplier is:
- a. 2
 - b. 3
 - c. 5
 - d. 10

TABLE 9.6:

multiplier	investment	change in aggregate income
6		300
	20	40
3	40	

21. Use the table above to determine the change in aggregate income when the multiplier is 3 and the investment is 40 :
- a. 70
 - b. 95
 - c. 120
 - d. 140
22. Building the baseball stadium in the city of Matildaville would likely have the following effect on the market for loanable funds:
- a. interest rates would fall
 - b. **interest rates would rise**

- c. corporations would raise their level of investment spending
 - d. the price of the city's bonds would go up
23. Government economic advisors usually take into account the following criteria when making recommendations for new public projects:
- a. the economic benefit of the project
 - b. the opportunity cost of the project
 - c. the impact on business investment
 - d. **all of the above**
24. Which of the following best describes the possibilities for developing the city of Matildaville?
- a. **Different projects require different amounts of land, labor, and capital.**
 - b. All projects require increased resources in the long term.
 - c. All projects require reduced resources in the long term.
 - d. All projects require the same amounts of land, labor, and capital.

About the Author: The Buck Institute for Education

The Buck Institute for Education (BIE) is dedicated to improving 21st century teaching and learning by creating and disseminating products, practices, and knowledge for effective Project Based Learning. Founded in 1987, BIE is a not-for-profit 501(c)3 organization that receives operational funding from the Leonard and Beryl Buck Trust, and funding from other education organizations, foundations, schools and school districts, state educational agencies and national governments for product development, training, and research.

BIE is the author and publisher of a number of project-based instructional materials including the well-regarded *Project Based Learning Handbook: A Guide to Standards-Focused Project Based Learning* for Middle and High School Teachers used by over 30,000 educators across the United States and in over 30 other countries. The BIE *PBL Handbook* has been translated into Portuguese, Korean, and traditional and modern Chinese, and is available for purchase from publishers in the United States, Brazil, Taiwan, China and Korea. A shorter version has been translated into Arabic. In addition, BIE is the author and publisher of a popular set of curriculum units for U.S. high school and introductory college courses, *Project Based Economics* and *Project Based Government*.

BIE is now developing a series of *PBL Toolkits* that will focus on specific topics in Project Based Learning. This series includes the *PBL Starter Kit*, a guide for teachers when planning and implementing their first project. Other *Toolkit* volumes focus on PBL in various subject areas, building academic skills in PBL, creating complex multi-disciplinary projects, extending PBL with technology, using PBL to develop 21st century skills, assessment in PBL, and PBL for school administrators.

BIE led the creation of PBL-Online.org, a multi-media website for preservice and practicing teachers that provides guidance for conceiving, planning, managing, assessing, and improving standards-focused Project Based Learning. The PBL-Online site has been translated into Spanish (sp.PBL-online.org) and Mandarin (cn.PBL-online.org).

BIE has conducted highly-rated Project Based Learning professional development workshops for thousands of secondary school teachers and other educators since 1999. In addition to working with teachers in the United States, BIE has conducted PBL professional development presentations and workshops for teachers and Ministry of Education staff in China, Malaysia, Singapore, Jordan, Mexico, Peru and New Brunswick, Canada. A number of charter school management organizations, school reform models, state and district restructuring efforts have relied on BIE professional development and the BIE *PBL Handbook* to help them achieve their vision. These include Envision Schools, the New Technology Foundation, High Tech High Schools, the Coalition of Essential Schools, and the West Virginia Department of Education.

For further information, please visit www.bie.org and contact us at: info@bie.org.

9.1. MATILDAVILLE

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