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Is approved by the final examining committee:

Tim J. Newby

Jennifer C. Richardson

Aman Yadav

Cheryl Oestreicher

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THE EFFECTS OF A HUMOROUS INSTRUCTIONAL VIDEO ON MOTIVATION AND LEARNING

A Dissertation

Submitted to the Faculty

of

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by

Hans Peter Aagard

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

This of course is dedicated to my wife Mary and our now three children, none of whom were born when we started this thing. Mary has supported me every time I turned back to this work and been an ardent defender no matter which way I went. You rock, Mary. Thank you so so much!

Minnie, Eddie, and Karen – if you work hard and others support and push you along you can do hard, great things.

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TABLE OF CONTENTS

Page

Page

Page

Page

Page

LIST OF TABLES

Table Page

Table Page

LIST OF FIGURES

ABSTRACT

Aagard, Hans P. Ph.D., Purdue University, December 2014. The Effects of a Humorous Instructional Video on Motivation and Learning. Professor: Timothy Newby.

This study examines the effects of humor within an instructional video on student learning and motivation. Humor in education has been shown to improve students' perception of the instructor and learning environment, with mixed results on gains in actual learning. Humor has been suggested as a strategy to gain and maintain attention, improving motivation to learn. With the dramatic increase of online multimedia instruction, research on the use of humor on multimedia instructional materials can help us determine if it can be used to improve learning and motivation.

In a pretest-posttest controlled design, students viewed a short multimedia instructional video. In the control group, students viewed a non-humorous video explaining three ways to cite sources in a research paper. In the experimental group, students viewed the same video with four humorous additions unrelated to instructional content. After watching the video, students in both groups took a learning and motivational assessment. Learning was assessed with questions related to recall and application. Motivation was measured using the Instructional Materials Motivation Survey (IMMS).

Results on learning assessments found that overall there was no significant difference between the pretest and posttest between the control and experimental groups, nor was there a significant difference between the control and experimental groups on the motivation assessment.

However, gender was added as a factor of comparison, results showed that males scored higher on knowledge items on the pretest / posttest gain and were more influenced by humor than females on comprehension and the overall gain scores. In motivation, males perceived the humorous video as more satisfying and were more influenced by the humor than females in perception of confidence in the instruction. Significant correlations were found between perception of humor, learning gains between the pretest and posttest, and perception of motivation overall and in each gender.

Previous research on instructional humor has found gender to be an important factor in the perception of instructional humor. Because the designer and producer of the instructional video was male, it may be that males who enjoyed the humor were more motivated by, and learned more from, the humorous instructional video. Care should be taken in using humor in instruction to ensure the type of humor is received well by students of either gender in the course.

CHAPTER 1 INTRODUCTION

Introduction

A casual search in YouTube for "behaviorism" results in 9,810 results. The first result, a video called *Behaviourism 101* [sic] posted by "nessymon," is four and half minutes long, has an upbeat intro song and features an animated avatar in front of a whiteboard that changes slightly as she describes different concepts (*Behaviourism 101*, 2012). Next to her, an animated dog sits on a stool and appears to listen and ponder her lecture, reacting as a student might. The voiceover is varied and carefully paced. The video has over 43,000 hits since being posted in January of 2012.

Figure 1.1 Screen shot of YouTube video "Behaviourism 101" [sic] by nessymon

Instructional multimedia is more easily created and accessible than ever before. Instructors and students carry cameras built into their phones powerful enough to record high-resolution video (Dahlstrom, 2012). In this landscape of media proliferation it is important to develop educational media that is both well designed pedagogically so it produces the desired learning outcomes, and motivationally appealing to maintain student interest. Instructional materials are increasingly competing for students' time, not only with activities away from the screen, but with other activities on the same screen.

There is a range of strategies designed to make instructional content more compelling. Instructional media for children, like Sesame Street and Electric Company, incorporate humor as a means of getting or keeping attention (Bernat & Mueller, 2013; Fisch, 2004). The success of these programs leads one to ask if humor can be used in instructional media for students of other ages: does it both keep students' attention and help them learn? The goal of this study will be to answer these questions.

Background

Historical Approaches to Humor

Humor is a complicated topic that has been examined by some of the greatest thinkers on the planet, including Plato, Aristotle, Freud, and Cicero (Morreall, 1987). It is a difficult concept to define or achieve, yet is a universal experience in daily life (Earleywine, 2010), while simultaneously being subjective and highly personal (Garner, 2006). However, upon closer inspection, history shows a theoretical basis for humor, an examination of which may lead to other discoveries. As Freud points out, humor is

strongly connected to other parts of the personality and surely helps us understand other facets (Freud, 1989).

Humor can be divided into content and structure, i.e. what the joke is about and the way that it is told (Ruch, 1992). Humor theory began with examining specific content and slowly broadened out to address different structures.

The first theory of humor focused on put-downs, and is commonly referred to as the Superiority Theory. The literature on it begins early in our history; thoughts on humor by Plato, Aristotle, and Hobbes mentioned only aggressive content (Aristotle, 350AD; Cicero, Watson, & Jones, 1875; Plato, 1990). These thinkers suggested that humor ought to be avoided because it relied on enjoying other people's pain as a means of asserting power by diminishing others; their view of humor was as something that could only be produced and enjoyed by someone with a "momentary anesthesia of the heart" (Bergson, 1911, p. 5). Ellen DeGeneres, a modern comedian, concedes that this is still common: "Most comedy is based on getting a laugh at somebody else's expense" (Rocca, 2012). Superiority Theory's focus on one type of content is its weakness as a universal theory.

The next historical theory of humor to develop was the Incongruity Theory, which marked a shift in focus from content to structure. It states that the core of humor is something odd or unusual, differing from our normal expectations, with a sense of playfulness that can prime the cognitive decision to work through the conflict (Cicero, 1875; Martin, 2007). Incongruity Theory has two forms: incongruity-resolution and nonsense (McGhee, Ruch, & Hehl, 1990; Ruch, 1992; Shultz, 1996). Incongruity-

resolution sets up a problem to be solved (Levine, 1969; Rothbart, 1996), and if it is not, someone didn't "get the joke." Nonsense humor begins with an incongruity but provides no "full" resolution; there may be no solution, a partial solution, or more incongruity (McGhee et al., 1990).

The next theory of humor to develop, Relief Theory, came from Freud. He postulated that humor relieves tension from other areas of our lives by taking psychic energy tied up in sexual or aggressive inhibitions and releasing it through laughter (Freud, 1989).

Humor in Education

Each of these three theories describes a different part of humor—Superiority Theory focuses on the content, Incongruity Theory addresses humor structure, and Relief Theory examines the psychological rationale for the good mood resulting from a laugh.

But how does humor connect to education? Perhaps this answer can be found through examining motivation. One model of motivation developed by Keller (2010) focuses on four personal variables: Attention, Relevance, Confidence, and Satisfaction (ARCS), with humor used as a strategy to capture and maintain Attention. However, Keller emphasizes that humor should be used with care to avoid distracting the student from the educational message (Keller, 2010; Mayer, 2014).

In fact, humor in education has improved factors such as student perception of the instructor, particularly likeability, without an attendant decrease in credibility (Gruner, 1967, 1970), although the gender of the instructor may influence perceived

credibility (Bryant, Comisky, Crane, & Zillmann, 1980; Tamborini & Zillmann, 1981). For example, Bryant, et al. found that males lost little credibility with students when using most humor, but that was not the case with female instructors (1980). This will be discussed more below in the "Instructor Evaluations" section of Chapter Two. The classroom environment has also been the focus of research, indicating that humor increases student interest in the instructional content, makes students more relaxed, and increases perception of the instructor as approachable, making for a more comfortable learning environment (Askildson, 2005). From the instructors' perspective, humor has been found to help students relax, capture student attention, help the instructor appear more relatable, and make the classroom environment enjoyable (Neuliep, 1991). Other studies report less student stress about course content and the course in general, and improved student perception of the usefulness of course content (Berk & Nanda, 1998). Humor has similar effects in online environments (Anderson, 2011).

Studying Humor in Education

However, aside from these secondary factors that influence learning, does humor have a specific and direct effect on learning gains? Most studies that report learning gains appear to have problematic research designs (Kaplan & Pascoe, 1977; Kothari, Rana, & Khade, 1993; Ziv, 1988). Additionally, studies with more rigorous designs seem to show no significant improvements in learning (Gruner, 1967, 1970). One well-designed study even found a decrease in learning (Fisher, 1997). Yet given the list of perceived benefits of humor in the classroom, it appears that humor is of value in

the learning experience. Additional studies designed with more experimental rigor and focusing on an examination of the question of learning gains are required in order to fully answer these questions (Banas, Dunbar, Rodriguez, & Liu, 2011).

Multimedia is an increasingly common distribution mechanism for instruction of any kind (Houser, Cowan, & West, 2007). A number of the studies described above used multimedia as the way to deliver a humorous instructional message (Fisher, 1997; Gruner, 1967, 1970; Tamborini & Zillmann, 1981). The design of multimedia messages is important. Mayer and others focus on strategies to improve the crafting of multimedia content (Clark & Mayer, 2003; Mayer, 2009). He defines a multimedia message as "a presentation involving words and pictures" (2009, p. 3) ranging from a narrated PowerPoint of static images to a full-motion video with sound. Mayer developed the Cognitive Theory of Multimedia Learning, building on Dual-Coding Theory (DCT), Cognitive Load Theory, and Active Learning (Mayer, 2007). DCT suggests that the mind receives and organizes verbal (words) and nonverbal (images) differently (Mayer, 2009; Paivio, 2007), and that the visual and auditory input systems are different; thus, we see and hear information differently (Baddeley, 1992). Cognitive Load Theory suggests the mind has the capacity for a limited amount of information intake, which must be carefully managed (Chandler & Sweller, 1991), while Active Learning proposes that the learner is an active participant in the learning process, taking in information and connecting it to previous learning (Mayer, 1999).

These foundational theories provide the groundwork for specific strategies to design multimedia in a way that will improve the likelihood that information will be

processed and connected to previous learning. Tension between Mayer's theory and affective factors like motivation have been mitigated by Moreno's Cognitive-Affect Theory of Learning with Media (CATLM) which builds on Mayer's Cognitive Theory of Multimedia Learning and includes affective factors (Moreno, 2006). This gives a framework in which humor can be examined as a variable influencing motivation, which in turn is an affective factor in learning cognitively from multimedia instruction.

Statement of the Problem

Humor has been shown in some conditions to improve student perception of the instructor without diminishing their perceived credibility. It has also been shown to provide a number of benefits, including improving both student and instructor perceptions of the class environment. Previous studies have shown mixed results in terms of learning gains, with the most rigorous studies showing no significant difference between learning environments incorporating humor and those that do not (Fisher, 1997; Gruner, 1967). This study seeks to improve on many of the existing studies by incorporating a more rigorous experimental approach.

Finally, studies focusing on the effects of humor on learning and motivation have largely used multimedia as a means of capturing static lecture material. This study proposes to examine the role of humor in instruction designed for only multimedia delivery.

Research Questions

The purpose of this study is to determine the effects of adding humor to an instructional video on learning and motivation. The research questions for this study are as follows:

R_1 – Does adding humor to an instructional video influence learning?

H_1 – Adding humor to an instructional video will improve learning.

R_2 – Does adding humor to an instructional video influence motivation?

H_2 – Adding humor to an instructional video will improve motivation.

R_3 – Does the gender of the student influence learning or motivation?

H_3 – The gender of the student will not influence learning or motivation.

Significance of the Study

The results of this study will add to the existing literature on the use of humor in instruction, ideally adding rigor to the experimental studies examining the effects on learning and motivation. In addition, it will contribute to the perspective of humor in instruction designed for multimedia deployment.

CHAPTER 2 LITERATURE REVIEW

This chapter will focus on humor and its effects on learning. It will first address humor and humor theory, briefly outlining its history and focusing on three humor theories: Superiority, Incongruity, and Relief. It will then move on to motivation and the role humor may have in affecting learning motivation. Next, it will examine the role of humor and its effects on teaching and learning; of particular note will be the effects on student perception and learning. Finally, it will close by connecting this research to expanding efforts in examining motivation in multimedia learning.

Humor

To begin, we will define humor, give a brief overview of the history of humor theory, and then focus on three relevant theories of humor.

Definition of Humor

Mel Brooks wrote, “Tragedy is when I cut my finger. Comedy is when you fall into an open sewer and die” (Salkin, 1975). The truthfulness of this statement and its absurdity at face value emphasizes that humor is hard to define, partially due to its association with individual perception. Funny people are never more uncomfortable than when explaining how their humor works or how they write it. Some warn us more deliberately that perhaps we should stay away from analysis, “since it may be that

reflection kills laughter" (Dugas, 1902, p. 1 as quoted in Freud, 1989, p. 178). People argue that they "know what's funny when they see it" but cannot say why (Earleywine, 2010, p. 4). Defining humor, and what is funny, seems analogous to distinguishing between music and good music: it comes down to personal taste. Humor is "highly personal, subjective, and contextual and we cannot always predict the way it will be received. Things that one person might find humorous, ironic, or funny may be viewed by others as trite" (Garner, 2006, p. 178).

Yet the universality of humor still compels thought and research on the topic. Great minds like Aristotle, Cicero, and Freud have weighed in on humor. Freud, one of the most important psychologists of the 20th century, states in his book, *Jokes and Their Relation to the Unconscious*:

> Is the subject of jokes worth so much trouble? There can, I think, be no doubt of it…I can appeal to the fact that there is an intimate connection between all mental happenings—a fact which guarantees that a psychological discovery even in a remote field will be of an unpredictable value in other fields" (Freud, 1989, p. 13).

In other words, he argues that learning about humor is valuable, if only because of its many connections to other parts of our personalities.

Humor Theory

A Brief History of Humor Theory

In addition to Freud, some of the greatest minds in documented history have weighed in on humor. Plato, Aristotle, and other early philosophers appeared to define humor as aggressive or critical denigration of others; this viewpoint was later labeled the Superiority Theory of Humor. Possibly because of this definition, their approach was largely prescriptive. Plato advised against humor, asserting that laughing at others' misfortunes is a pleasure that comes from malice and is a vice that brings pain (Plato, 1990). Aristotle found more balance, arguing for "tasteful" humor and "tact," admitting that it is not hard to find things funny, but advising caution: "the ridiculous side of things is not far to seek…and most people delight more than they should in amusement and in jesting" (Aristotle, 350AD Book 4, Ch. 8). Hobbes agreed more with Plato, remarking that laughter is a grimace, and that those who mock others do so out of insecurity (Hobbes, 1651).

Focus later shifted from one definition of humor to a broader view that included structure. Cicero advised against humor about the helpless, but went on at length about how a playful disposition and "strokes of wit give pleasure to an audience, and are often of great advantage to the speaker" (Cicero et al., 1875, p. 144). This was perhaps the first mention of humor as a teaching strategy. Cicero also began to make distinctions between different kinds of jokes, "one of which is excited by things, the other by words" (Cicero et al., 1875, p. 151) and gave us a joke structure: "this is the most common kind

of joke, when we expect one thing and another is said; in which case our own disappointed expectation makes us laugh" (Cicero et al., 1875, p. 157). Here we see the beginning of what was later labeled the Incongruity Theory.

Finally, Freud contributed to humor theory by suggesting the means by which the pleasure in humor comes. He wrote, "in laughter…the conditions are present under which a sum of psychical energy which has hitherto been used for cathexis is allowed free discharge" (Freud, 1989, p. 181). Cathexis refers to unhealthy focus on (largely societal) mores of restraint; Freud's work led to what is later labeled the Relief Theory. Early philosophers' work on humor gives us the foundation for modern humor analysis (Morreall, 1987). With an overview of the three theories, we can focus with more intent on the first, Superiority Theory.

Superiority

As described earlier, Plato, Aristotle, and Hobbes developed the basic tenets of the Superiority Theory, which positions humor as an act of aggression against another group or individual as a means of elevating the aggressor. Plato and Aristotle began by prescribing when it was appropriate to laugh or tell jokes. Plato assumed jokes were derisive (Plato, 1990), while Aristotle recognized the social aspect of humor but noticed its emotional effects and warned against boors who used it too much (Aristotle, 350AD). Hobbes agreed: "Laughter at the defects of others is a signe [sic] of Pusillanimity [lack of courage]" (Hobbes, 1651). Bergson, another philosopher, argued that comedy is pernicious and indicates an absence of feeling, "something like a momentary anesthesia

of the heart" (Bergson, 1911, p. 5), which might allow people to make fun of something like a physical deformity. He made a compelling point in explaining that physical deformities in popular comedic culture are those that can be imitated by those without deformities. A modern example of this is Gwyneth Paltrow, voted in 2013 to be the World's Most Beautiful Woman (Jordan, 2013), who played both herself and an extremely obese version of herself in the comedy film *Shallow Hal* (Farrelly & Farrelly, 2001). As someone popularly acknowledged as a standard of beauty, temporarily donning a physical deformity for comedic effect might be seen as callous. Freud points out that "hostile" humor tries "to turn the hearer who was indifferent to begin with, into a co-hater or co-despiser, and creates for the enemy a host of opponents where at first there was only one" (Freud, 1989, p. 163). The effectiveness of attack humor seems to rely on the emotional payoff of the audience feeling superior to the target of the joke. Modern examples of this strategy in media include divisive cable personalities like Bill O'Reilly and Rachel Maddow, who use humor in derisive political attacks. In stand-up comedy, Don Rickles personifies this approach with constant verbal ridicule aimed at audience members (Korobkin, 1988; Morreall, 1987), who feel relief when not targeted and special attention when it is their turn (Kinde, 2013).

Aggressive jokes can divide people and draw lines around who is in and who is not: "every joke calls for a public of its own and laughing at the same jokes is evidence of far-reaching psychical conformity" (Freud, 1989, p. 185). However, Davies argues that the audience often knows that a joke aimed at another town or country is a form of

bonding: “we should not mistake the glee of the winners in this successful piece of playful aggression for real hostility” (Davies, 1998, p. 13).

As mentioned earlier, the limitation of the Superiority Theory is its narrow content focus. It can describe the tension between brothers, spouses, parents and in-laws bickering and jostling for power on a popular sitcom like *Everybody Loves Raymond*, but cannot explain the humor in Bill Cosby’s description of a dentist visit in *Bill Cosby: Himself*. Its usefulness is limited, leading us to a more expansive approach, Incongruity Theory.

Incongruity Theory

Incongruity Theory, by avoiding focus on one type of content and instead describing joke structure, expands into every part of humor, including the aggressive humor previously described by Superiority Theory. It describes joke structure as a conflict: “an idea, image, text, or event that is in some sense incongruous, odd, unusual, unexpected, surprising, or out of the ordinary” (Martin, 2007, p. 6). In this way horror and humor are closely related—horror also relies on incongruity—but in horror the incongruity is used to dire effect (Earleywine, 2010; Rothbart, 1996). In humor the dissonance is meant to be pleasant. The “nonserious or unimportant” tone of the incongruity gives humor a sense of playfulness, which may prime the cognitive decision to relax and work through the incongruity (Martin, 2007, p. 6). Others agree; Apter (1982) divides communication into telic (serious, goal-minded) and paratelic (alongside, playful) and argues that jokes need to include the playful paratelic side, while Freud,

who appeared to have views on every aspect of humor, argued that this playfulness is necessary to prepare the mind and convince it to participate (Freud, 1989). Thus, part of humor is a comic, or lighter, frame of mind.

Another part of humor is what is done with the playful state of mind. In Incongruity Theory there appear to be two structural patterns: incongruity-resolution and nonsense (McGhee et al., 1990; Ruch, 1992; Shultz, 1996). Incongruity-resolution creates an incongruity and then resolves it in a unique way. Nonsense creates an incongruity and then does not fully resolve it.

An example of the incongruity-resolution structure is a joke by Steven Wright: “Next week I'm going to have an MRI, to find out whether or not I have claustrophobia” (Wright, 2007). The set-up of the joke, “Next week I'm going to have an MRI,” creates a serious mood and forces the audience member to think of reasons why he or they might get an MRI. The success of the joke then depends on the resolution, and how it relates to our expectations. In Wright's joke, the resolution, “to find out whether or not I have claustrophobia” presents an incongruity. Claustrophobia is not diagnosed with an MRI machine. However, it is a diagnosable mental illness. Because phobias are real diseases and MRI machines are used to diagnose real diseases, the incongruity is resolved when the connection is made between people being seriously ill and going through a procedure as part of the diagnosis process (the MRI) that may make them nervous and potentially more ill. Wright is not going to get an MRI to find out if he is claustrophobic; he is pointing out that the MRI machine might make anyone feel claustrophobic when they don’t need any more stress.

In this way a joke is characterized as a problem to be solved (Levine, 1969; Rothbart, 1996), and when it is not solved the listener does not "get the joke." Research suggests that resolutions closer to what the listener is expecting are perceived as funnier (Kenny, 1955; Suls, 1972), though Freud argues that the greater the distance between the two ideas, the more powerful the effect of the joke (Freud, 1989, p. 147). Perhaps there is a Zone of Proximal Humor between the familiar and unfamiliar that a joke must inhabit in order to be perceived as funny.

After incongruity-resolution, nonsense is the second structure in Incongruity Theory (Ruch, 1992; Shultz, 1996). Nonsense jokes start with the incongruity-resolution structure but "may 1) provide no resolution at all, 2) provide a partial resolution (leaving an essential part of the incongruity unresolved), or 3) create new absurdities or incongruities" (McGhee et al., 1990, p. 124). An example of a joke with a nonsense structure is: "Q) How did the dinosaur get out of the lake? A) Wet." The resolution trades on the dual meaning of the word "how," where our expectation is a humorous description of the process of the dinosaur leaving the lake, an adverb. Instead we receive a description of the state of the dinosaur, an adjective. The incongruity is not solved, giving "the appearance of making sense out of incongruities without actually doing so" (Ruch, 1992, p. 32).

Another example of nonsense humor is *Curious George* (Rey, 1969). In this popular book and television series an adventurous monkey exhibits characteristics of both a monkey and a human. This incongruity is never fully resolved—we do not find out that George is only just a monkey or actually a little boy imagining he is a monkey, or

that there is a point to his being a monkey. However, the tension of this oddity helps maintain interest in what happens. *Curious George* is wildly popular with young children, who seem to be fascinated by a monkey having human-like adventures. Children seem to have a unique appreciation for nonsense humor (Pien & Rothbart, 1976).

Shifting from the structural aspects of Incongruity Theory, Relief Theory tries to explain the psychological mechanism of humor that gives us pleasure. Why does humor work?

Relief Theory

The core idea of Relief Theory is that humor gives us relief from tension built up in other areas of our lives. Freud establishes this concept in his work, building on the work of Spencer (1911). Freud theorizes that we have psychic energy put into sexual or aggressive inhibitions that build internal tension, and when someone laughs at a joke "he laughs this quota off" (Freud, 1989, p. 182). The energy is put to good use; instead of adding to the existing tension, we feel pleasure when it is released. Laughing is therapeutic; jokes "come to our help" psychologically (Freud, 1989, p. 121). Freud compares the mood change that occurs from laughing with that created by alcohol, arguing that a cheerful mood makes us less inhibited, less critical and more open to natural pleasures we have suppressed (Freud, 1989, p. 155). The pervasiveness of humor in every aspect of our lives can be seen as a means of mood control and positive energy "making accessible once again sources of pleasure which were under the weight of suppression" (Freud, 1989, p. 155).

Humor Theory Summary

These three theories describe different parts of humor. Superiority Theory describes one type of content—aggressive or denigrating humor. Incongruity Theory aims more broadly, and describes humor structure: an incongruity, with or without a resolution, for the audience to solve. Relief Theory suggests a psychoanalytic explanation of what happens when we enjoy humor: an efficient expenditure of psychic energy.

Motivation

Motivation, like humor, has a history of thought that can be traced back to early philosophers like Plato and Aristotle (Schunk, Pintrich, & Meece, 2008). Motivation is studied in its relation to every conceivable aspect of life, including education. In teaching and learning several theories of motivation abound; this study will utilize Keller's motivational approach for three key reasons. First, Keller gathers research from a wide range of "concepts, constructs, and theories" and organizes them into an organized, cohesive framework (Keller, 2010, p. 12). For example, his framework includes the concepts of intrinsic and extrinsic motivation, state versus trait, and person versus environmental models. Second, Keller provides an approach that focuses specifically on the effects on motivation resulting from changes in instruction, translating the various theories and models into specific strategies to improve instruction. Finally, Keller provides specific, validated instruments to measure motivation levels based on the framework (Keller, 1983, 2010).

This section will define motivation and then focus on a specific theory, Keller's Macro Model of Motivation and Performance, as it relates to the use of humor in learning.

Definition of Motivation

Motivation comes from the Latin *movere*—to move. Motivation research focuses on what makes people move, continue moving, stop, or change direction. Keller defines motivation as "that which explains the *direction* and *magnitude* of behavior" (Keller, 2010, p. 3, emphasis original). For example, if we were to examine motivation for eating food, we would try to explain what we eat, how much we consume, and when we consume it.

Keller's Macro Model of Motivation and Performance

Keller's Macro Model of Motivation and Performance incorporates theory and models from a range of sources into a systems model for learning and workplace performance. It connects the two overarching theoretical approaches to motivation: variables related to the person and variables related to the environment (Weiner, 1992). To Keller, the individual brings a combination of factors to the learning situation, including curiosity, motives, and expectations (Keller, 2010). These individual factors combine with environmental factors instructors can control (such as motivational design and management of the learning environment) to produce student performance.

Keller's theory draws out four personal variables—Attention, Relevance, Confidence, and Satisfaction (ARCS)—and suggests strategies for changing the instruction or instructional environment to improve the motivational experience for the

learner. His focus is on influencing perception of the personal variables by modifying environmental variables (Keller, 1983).

Attention

Attention's nemesis is boredom, and it is the job of both the student and the instructor to combat this and answer the challenge of "how to stimulate and sustain the learner's attention" (Keller, 2010, p. 76). Attention, along with Relevance and Confidence, can influence the amount of effort a student puts into learning, and can be modified by the instructor with Motivation Design Management, as can be seen in Figure 2 below. Keller suggests three overall categories of Motivation Design Management strategies: perceptual arousal (capture interest), inquiry arousal (stimulate inquiry), and variability (maintain attention).

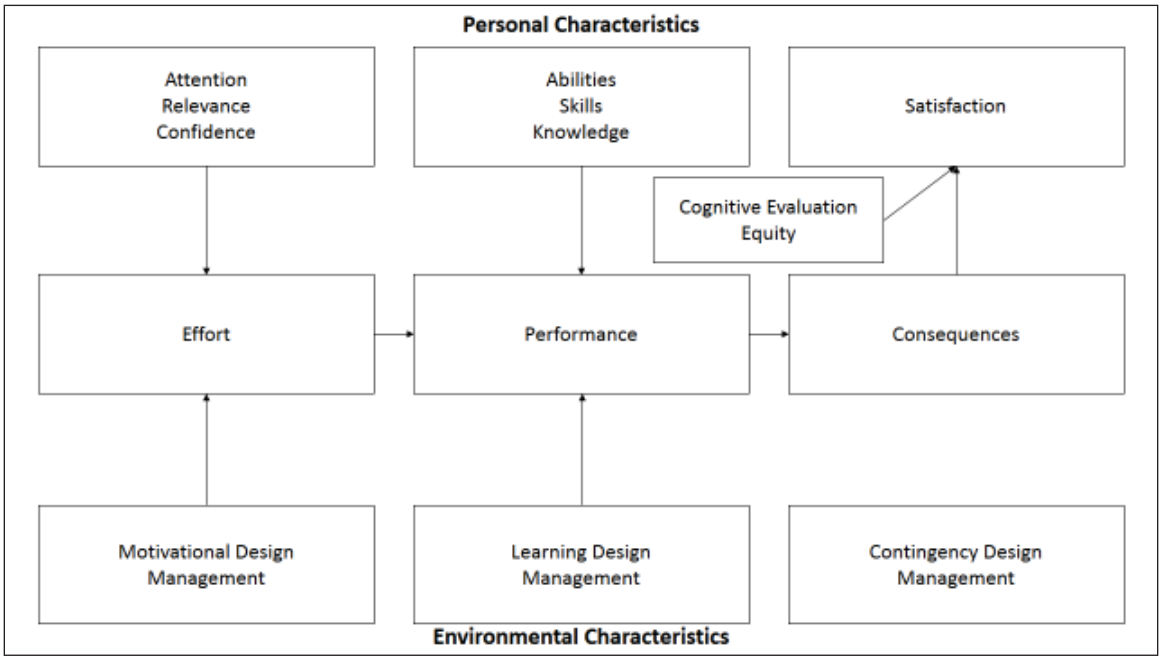

Figure 2.1 Representation of Macro Model of Motivational Design and Performance

Perceptual arousal is somewhat superficial. It aims to capture people's attention, and cannot hold attention for long without other strategies in place. Strategies of perceptual arousal include referring to specific people, concrete examples, and presenting with enthusiasm (e.g., voice variation). The key question for perceptual arousal is "What can I do to capture their interest?" (Keller, 2010, p. 47). Keller suggests humor in this category—it can "be used to arouse curiosity, but must be used with care. It can cause distractions rather than increase interest in the subject matter" (Keller, 2010, p. 47). Mayer agrees; while humor may be a means of attracting or keeping attention (Mayer, 2014), it may be considered an extrinsic motivation for learning. Extrinsic motivation is external to the student and less stable over the long term, whereas intrinsic motivation is internal to the student and more stable over time (Schunk et al., 2008). Instructors should take care to avoid causing a student's motivation to shift from an intrinsic motivation, like interest in the topic, to an extrinsic motivator, such as humor in the classroom (Harp & Mayer, 1998). Students may quickly adapt to extrinsic motivators (Schunk et al., 2008), requiring the instructor to become more animated as the semester progresses in order to get the original reaction (Earleywine, 2010). Thus, humor must be used with care. However, for students without intrinsic motivation, an extrinsic motivator like humor may increase the amount of attention students give to instruction. Specific strategies to achieve this balance will be described later in this chapter.

Inquiry arousal, Keller's second strategy in Attention, focuses on maintaining attention through conflict, presenting problems or mysteries to be solved or conflicting

statements that need to be reconciled. This is related to the Problem-Based Learning (PBL) model of instruction that originated and is currently used in medical schools. PBL frames the class period or course in terms of a problem that needs to be solved through the application of course content (Neville, 2009). While this strategy is similar to the incongruity-resolution structure of humor, humor is not included in this category, perhaps because to be useful the incongruity is prolonged so that the tension created by cognitive dissonance can focus attention.

The third strategy in Attention is *variability*. Essentially, Keller suggests using attention-capturing activities to maintain attention over time. This includes adding variation in learning materials and learning activities. Variation in learning materials includes breaking up text with white space or headings; variation in learning activities includes switching between lecture, discussion, and group work within a class session. It also includes the use of humor and active presentation styles (Keller, 2010).

While humor affects Attention in Keller's model, the other three motivational variables of Relevance, Confidence, and Satisfaction will also be included in this discussion because learners vary in their motivational preference. The Attention strategy used in this study, adding humor to instruction, may work for some learners but not others. There does not appear to be an instrument that reliably measures student learner motivation in terms of the ARCS framework. Keller suggests that the instructor complete a motivational analysis based on their knowledge of the students (Keller, 2010). This is not always possible, feasible, nor would it appear to be consistently accurate, since students may be motivated by different aspects of instruction in ways

that cannot be determined by demographic information. However, the effects of one category of motivation may affect others (Keller, 2010), akin to the way Freud describes the far-reaching connections of humor to other facts of our minds (Freud, 1989). Thus, all four categories of motivation will be described and included in this study.

Relevance, Confidence, and Satisfaction

As relevance, confidence, and satisfaction are key terms in Keller's work, it is of use to this study to define them here.

Relevance is the perceived value of the instruction for the student: "If the student has a good feeling about the personal meaningfulness of the material, or consciously recognizes its importance, then the student will be motivated to learn it" (Keller, 2010, p. 48). Strategies to make instruction more relevant include determining student goals and clearly connecting those goals with the content.

Confidence focuses on a student's sense of control and their belief in their chances of succeeding in the activity or course. Strategies for confidence include building positive expectations for success among students and helping them attribute success in the course to factors they control.

Satisfaction focuses on students' feelings about their learning experience. Strategies for improving satisfaction include positive feedback and reinforcement, praise or rewards, and consistent rules and measurement.

Measuring Motivation

Keller created instruments to test student perceptions of instruction. His Instructional Materials Motivation Survey (IMMS) is used for individual instructional units (Keller, 2010, p. 277), and will be used in this study to measure student perception of the instructional intervention. It has been used to diagnose motivation in the use of varying instructional technology: different media, (Bolliger, Supanakorn, & Boggs, 2010; Choi & Johnson, 2005; Rodgers & Withrow-Thorton, 2005), computer-assisted instruction (Galbraith, 2011; Huang, 2006; Song & Keller, 2001; Yang & Chin, 1997), online medical education (Cook, Beckman, Thomas, & Thompson, 2009; Jang, Hwang, Park, Kim, & Kim, 2005; Kirkpatrick, 2007; Pittenger, 2010), augmented reality (Di Serio, Ibáñez, & Kloos, 2013) and others (Allison, 2012).

Multimedia Instruction

In addition to motivation, this study will also examine the importance of the medium by which instruction is delivered. A number of studies used multimedia as the delivery mechanism for humorous instruction (Fisher, 1997; Gruner, 1967, 1970; Tamborini & Zillmann, 1981). Multimedia is an increasingly common distribution mechanism for instruction of any kind (Houser et al., 2007). For example, Massive Open Online Courses (MOOCs) offer video lectures from professors at prestigious universities for a low fee or for free (EDUCAUSE, 2013). Online learning continues to grow in higher education (Allen & Seaman, 2011, 2013, 2014), and multimedia is easier to produce and share than ever before. Google reported in January of 2012 that an hour of video was uploaded to YouTube every second, ten times more than in 2007 (New Scientist, 2012).

With the increase in media and the popularity of humorous media, educators would do well to focus on the role of multimedia in learning.

Media and Motivation

Mayer defines a multimedia message as "a presentation involving words and pictures" (Mayer, 2009, p. 3), which can range from a narrated PowerPoint of static images to a full-motion video with sound. Mayer suggests that presenting information in a multimedia format may be more effective than just hearing information, that words may be helpful for expressing certain kinds of information while images are more helpful for others, and that "one picture is not necessarily equivalent to 1,000 words (or any number of words)" (Mayer, 2009, p. 5). Mayer's work led him to develop the Cognitive Theory of Multimedia Learning, which incorporates Dual-Coding Theory (DCT), Cognitive Load Theory, and Active Learning. DCT suggests that the mind receives and organizes verbal (words) and nonverbal (images) differently (Mayer, 2009; Paivio, 2007). In addition, the visual and auditory input systems are different: we may see and hear information differently (Baddeley, 1992). The mind has the capacity for a limited amount of information intake, which needs to be carefully managed (Chandler & Sweller, 1991). Finally, the learner is an active participant in the learning process, taking in information and connecting it to previous learning (Mayer, 1999). With these theoretical foundations, the theory prescribes specific strategies when designing multimedia instruction to improve the likelihood that information will be received and connected to previous learning.

Mayer's Principles of Multimedia Learning

The studies conducted by Mayer and others to build this theory sometimes differ from traditional lecture-based instruction (Harp & Mayer, 1997, 1998; Mayer & Anderson, 1991; Mayer, 1989, 2009; Moreno & Mayer, 1999). In a traditional lecture the focus can be on the instructor; however, in instructional multimedia, the focus tends to be on the content—the text, images, and sounds of the video—and their combination in a way that makes the content easier to understand (Clark & Mayer, 2003; Mayer, 2009; Moreno, 2006).

Mayer posits roughly a dozen principles to guide multimedia instruction development, bundled in three overall strategies (Mayer, 2009). It should be noted that Mayer differentiates between measures of retention and transfer, a distinction made in the current study, where retention is a corollary to knowledge, and transfer is a corollary to comprehension and application (Mayer, 2002).

Mayer's multimedia principles are grouped together under different goals (Mayer, 2009). They will be described along with their attending principles. A summary can be seen in Table 2.1.

Table 2.1

Mayer's Principles for Multimedia Instruction Development

Reducing Extraneous Processing	Managing Essential Processing	Fostering Generative Processing
Coherence	Segmenting	Multimedia Principle
Signaling	Pre-Training	Personalization Principle
Redundancy	Modality	Voice Principle
Spatial Contiguity		
Temporal Contiguity		

Reducing Extraneous Processing

The first goal is reducing extraneous processing, which he defines as removing content that distracts from the lesson. There are five principles that fall under this umbrella; each suggests that by following the principle, retention or transfer of the informational content will be improved. The first is *coherence*, which proposes the removal of "interesting but irrelevant" words, pictures, and (Mayer, Bove, Bryman, Mars, & Tapangco, 1996). The next is *signaling*, which advises highlighting key words and graphics. Highlights may include organizing words; for example, adding a list with steps (Harp & Mayer, 1998). *Redundancy*, the third principle, recommends removing unnecessary captions from animation with narration; for instance, adding the text of a narration describing how lightning works (Mayer, Heiser, & Lonn, 2001). *Spatial contiguity* suggests putting words next to the graphics to which they are related, such as

labeling the parts of a working brake (Mayer, 1989). Lastly, *temporal contiguity* explains that learning is improved when words and pictures that are related are presented at the same time, such as a narration playing simultaneously with on-screen animations versus before or after (Mayer & Anderson, 1991).

Managing Essential Processing

The next group of principles falls under the heading of managing essential processing. *Segmenting* is breaking a multimedia tutorial into pieces whose progression is under the user's control, such as a 16-step tutorial that a user controls versus a two-minute continuous tutorial (Mayer & Chandler, 2001). *Pre-training* suggests giving an overall conceptual explanation before digging into details (Mayer & Mathias, 2002), while *modality* supports using pictures and spoken words in a presentation rather than pictures and written words (Mayer & Moreno, 1998).

Fostering Generative Processing

The last group of principles are known collectively as Fostering Generative Processing (Mayer, 2009). Within this, the *Multimedia Principle* suggests that we learn from pictures and words better than words alone (Mayer & Gallini, 1990). The *Personalization Principle* suggests using informal instead of formal language (Moreno & Mayer, 2000). The *Voice Principle* suggests using vocal cues that improve the sense of social connection with the learner (Mayer & Sobko, 2003).

Mayer points to a great deal of research to conclude that using these specific strategies can improve learning by minimizing extra cognitive load, maximizing the use

of existing cognitive processes, and improving generative processes in multimedia presentations (Mayer, 2009).

Seductive Text

Mayer's focus on content and media instead of a person may be a factor in the tension between the motivational aspect of humor in instruction and his principles related to multimedia learning. Most of Mayer's principles, before the more recent study on Personalization and Voice Principles in 2004, only focused on the cognitive aspects of learning, leaving out affect and motivation, an area Mayer admits has been understudied (Mayer, 2014). Mayer may classify humor as an *Emotional interest adjunct*, or "added material that is entertaining but irrelevant to explanation" (Harp & Mayer, 1997, p. 95). Borrowing the term *seductive text*, which describes details slightly or not related to important information in a text (Garner, Brown, Sanders, & Menke, 1992, p. 242), Harp & Mayer tested seductive text and seductive illustrations in recall and interest. This is related to Mayer's principle of coherence (Mayer, 2009). In a 1997 study conducted with undergraduates, they created four conditions (n=74), one with no additional material (n=19), one with seductive text (n=17), one with seductive illustrations (n=18), and one with both seductive text and illustrations (n=10). Seductive details in this case refer to unimportant details—information students do not need to understand the concept. These might be called "fun facts." For example, when explaining how lightning works, the added seductive text read: "In trying to understand these processes, scientists sometimes create lightning by launching tiny rockets into overhead clouds" and the seductive image was an image of a rocket launching base

(Harp & Mayer, 1997, p. 94). Students were randomly assigned to conditions. They used self-reported knowledge of meteorology as a pre-test, and after the instruction measured interest, recall, and problem solving. Recall was measured with an open-ended question, “Please write down everything you can remember from the passage” and problem-solving was measured with four open-ended questions; for example, “What could you do to decrease the intensity of a lightning storm?” (Harp & Mayer, 1997, p. 96). Recall items were scored with one point for identifying each of eight key ideas, and problem-solving items were scored with one point for each acceptable answer.

Results indicated that in recall, the condition with no seductive details significantly outperformed the other three, and the two conditions with either seductive text or illustrations significantly outperformed the condition with both. Summarizing in terms of cognitive load theory, the seductive text and illustrations took up cognitive space meant for more critical information, and when combined, this effect was increased. In the problem-solving measure, the condition with no seductive details significantly outperformed the seductive text-only and seductive text and illustrations conditions, but not the seductive illustrations-only condition. In short, the seductive illustrations-only condition did not appear to be as detrimental as the seductive text-only condition or the combination of both. Interestingly, their measure of interest, a simple Likert scale, showed no significant difference between conditions, and Harp & Mayer conclude that “adding seductive detail hurt student learning of a scientific explanation” (Harp & Mayer, 1997, p. 100).

This study has few limitations. The lack of pre-test was made up for by a specific self-diagnosis survey, and students were randomly selected for groups. Informational content over which students would be tested was equal in each group. However, in the seductive text and illustrations condition, the captions under the illustrations repeated content from the seductive text, perhaps indicating importance to the reader, who was not tested on that information. In addition, the interest manipulation test failed.

The lack of significant difference in perception of interest was followed up by another study described in the same article in which students (n=84) assessed the same materials for "emotional" or "cognitive" interest on four questions (two questions for emotional and two for cognitive interest) with a 10-point bipolar adjective scale (Harp & Mayer, 1997). Students rated the base material as significantly more cognitively interesting and seductive text and illustrations as significantly emotionally interesting.

This second study has two major limitations. First, to separate the seductive details and explanative illustrations from the base text so they could be rated for interest, they were highlighted with different colors (seductive text = yellow, seductive illustrations = orange, explanative illustrations = green). The base text was not highlighted. Thus a consistent pattern was indicated to students, who could have quickly determined what was being requested. In addition each category was tested individually—yellow, orange, and green—which would have helped students confirm the pattern. A more robust test would have randomly highlighted different sections and tested them randomly or all at once. This leads to the second limitation: a textual analysis does not equate with students perceiving content to be more interesting when

included in the instruction as a whole. When seductive details appear next to important details, if they are not somehow labeled as seductive, students may perceive them to be important or of related importance. Implicit in other studies on seductive detail (see Garner et al., 1992) is that instruction from which students are to learn isoften poorly written, with the most important details buried under less important details, suggesting the need to organize content in a way that emphasizes the most important content.

Unrelated humor may differ from seductive detail because it may be apparent to the student that it is playful and not disguised as critical (Apter, 1982). If it is perceived as humor, it may be that students will not identify it as a detail that needs to be recalled later. Related humor, like humorous examples that help explain the content (Ziv, 1988) may not fit under the category of seductive detail because of their instructional importance.

However, in cognitive load terms, humorous content may still take cognitive space needed by more important information. For example, the idea of attentional switching suggests that energy spent on humor is a detriment to energy spent on the central content, particularly in media (Zilmann, Williams, Bryant, Boynton, & Wolf, 1980). Perhaps for this reason it is advised to use humor sparingly (Earleywine, 2010; Keller, 2010; Mayer, 2014; Ziv, 1988), and Mayer's model of Multimedia Instruction does not include affective components. Still, cognitive psychologists argue that affect has been neglected until very recently (Dai & Sternberg, 2004; Linnenbrink & Pintrich, 2004). Motivation theory states that interest, attention, and other affective components

play an important part in motivating people to learn (Hidi, Renninger, & Krapp, 2004; Keller, 1987, 2010).

A recent theory combines Mayer's approach with affective components. Moreno's Cognitive-Affect Theory of Learning with Media (CATLM) (Moreno, 2006) includes motivation and affect as potential influences on the learning process, allowing for the influence of factors outside a strictly cognitive approach. She measures motivation along with learning outcomes (Moreno, 2009). There is a call for more research on the topic; after their literature review on humor and education, Banas et al. suggest that "researchers interested in studying instructional humor may also consider investigating the role of technology in humor. As online classes and interactive options increase, there are new opportunities and challenges for integrating humor into instruction" (Banas et al., 2011, p. 138). This research is one answer to that call.

Humor in Education

We transition now from theory to practice. We will briefly return to theory to touch on humor and gender, which leads to humor in power dynamics like classroom instruction. Then we will examine humor in instruction, which has been studied in different instructional situations, examining factors such as instructor evaluations, classroom environments, and effects on learning. Results from these studies vary and sometimes contradict each other. This section will review those studies.

Instructor Evaluations

Humor is appealing as a personality trait. In advertising research, humorous commercials affect likeability of a brand more reliably than other factors, such as

remembering or trusting the brand (Weinberger & Gulas, 1992). Popular leaders with a sense of humor may appear to be more human or insightful through personal stories (Jonas, 2004). According to Relief Theory, humor can produce a pleasant feeling akin to alcohol consumption (Freud, 1989), which may improve perception of the humorist by association. However, instructors may be concerned that adding humor, even if it results in increased likeability, may damage their credibility as an authority on a topic. Several studies have examined this concern.

In a study conducted with students from a professional speaking class, Gruner (1967) randomized students into two conditions (64 in each) who heard a recorded non-humorous speech or a version with humorous additions. Gruner determined via a valid, bipolar adjective scale developed by Smith (1959) that students did perceive the humorous speech to be more humorous than the non-humorous speech. Speaker traits were measured with a scale developed by McCroskey (1966). The first trait, character, used adjectives like pleasant, honest, admirable, and the second trait, authoritativeness, used adjectives like reliable, qualified, and high status. In the results, students rated the humorous speaker significantly higher on character, with no difference in ratings of authoritativeness. In other words, adding humor to the speech improved students' perception of the speaker's likeability but did not detract from the speaker's credibility. (Gruner, 1967).

This study was well-designed, with one limitation in light of other studies examining credibility – the instructor was male, and a female counterpart was not tested. However, this did not appear to be within the scope of the research questions.

Gruner did an additional study (1970) with the same speech to focus on the findings related to perception of interesting content. This time he created four conditions: humorous-interesting, serious-interesting, humorous-dull, and serious-dull (Gruner, 1970). The original speech from the 1967 study was used for the humorous-interesting condition, and personalizing information was removed to create the dull conditions. Gruner added twenty-two humorous items for the humorous conditions. The interesting speeches were recorded with an enthusiastic voice, the dull speeches in monotone.

Students rated the humorous speeches as significantly more funny, and the interesting speeches as more interesting, ensuring the treatment was perceived as intended. Gruner found that the "addition of humor made the 'dull' speech more interesting, but did *not* make the 'interesting' speech more interesting" (Gruner, 1970, p. 164), perhaps indicating a ceiling effect for the perception of interesting content, at which adding humor could not increase perceived interestingness. Students in both the humorous and interesting conditions rated speaker character significantly higher, with the interesting factor having a stronger effect than humor. Students in both the humorous and interesting conditions rated the speaker significantly higher on authoritativeness. In other words, both interestingness and humor increased the perceived likeability and credibility of the speaker. Gruner's second study (1970) was limited in participant selection—students were not randomly selected for treatment, though they were matched for analysis. In addition, the dull speeches were performed differently than the interesting speeches; thus, another factor in addition to humor was being measured. Others (Keller, 2010; Mayer, 2009) mention voice modulation as an

attention getting and keeping strategy; the use of it here may have confounded the results.

Bryant and his associates also examined the connection between an instructor's use of humor in class and student evaluations (Bryant et al., 1980). Their design was a qualitative analysis of many instructors' existing lessons. A single student from each of 70 different pre-selected university courses recorded audio of a lecture and filled a bipolar adjective scale with 21 measurements per item (numbered from -10 to +10, including 0 with marks on each integer) on 13 items, labeled extremely _____ on either end. Extremes included *poor-articulate*, *lethargic-dynamic*, *boring-entertaining*, *dry-funny*, *unappealing-appealing* and others (Bryant et al., 1980, p. 514). Students later transcribed portions of the recorded lecture meant to be humorous, which were cross-checked and revised by another student. The researchers categorized humorous parts based on a framework from a previous study (Bryant, Comisky, & Zillmann, 1979). This framework included structure (e.g., joke, riddle, funny story), content (e.g., sexual, sexual hostile, nonsense), and relationship to educational message (related, distracting). The students recorded and rated 49 male and 21 female instructors. The instructor evaluations factored statistically into three categories: appeal, competence, and delivery (Bryant et al., 1980, p. 515).

Results showed interesting divisions along gender lines. Students rated male instructors higher on competence and significantly higher on effectiveness, appeal, and delivery when they used humor more frequently. They rated female instructors higher on appeal and lower on competence when they used humor more frequently. The

structure of the jokes mattered: funny stories improved perception of effectiveness, appeal, and delivery for male instructors, puns decreased perception of competence for female instructors. Whether or not humor was distracting, male instructors were perceived as more appealing, whereas female instructors were rated lower on all factors (effectiveness, appeal, competence, and delivery) with increased use of distracting humor. Female use of distracting humor was the only significant negative correlation with competence. The highest positive correlation was male-instructor appeal and their use of non-distracting humor (humor perceived to be related to course content). In other words, male instructors could joke on or off topic without affecting their credibility, but female instructors could not.

Another interesting finding was that students perceived male instructors as more appealing when using sexual humor, and female instructors were more appealing when using aggressive and sexually aggressive humor. In discussing the results, the authors suggest students may stereotype instructors, accepting jokes from male instructors and perceiving jokes from female instructors as breaking an unwritten rule about classroom conduct. Further, when female instructors use aggressive humor, it may push them into a degree of authoritativeness that becomes acceptable again (Bryant et al., 1980). This latter view connects to the Superiority Theory of humor, as the aggressor is perceived as more powerful when they use denigrating humor in a societally accepted way. It appears that the complex social nature of humor makes it difficult to untangle from social norms. Limitations of this study are few. Because of the

nature of the results, it would have been valuable to know the gender of the student evaluator.

Tamborini and Zillmann (1981) remedied the limitation of knowing the gender of the student in a follow-up study. The study had four conditions: no humor, sexual humor, other-disparaging humor, and self-disparaging humor. The study also included two gender conditions for the instructor, male and female, and student gender was noted. The treatments were applied to an audiotape introduction to a fictitious lecture. The three humorous conditions were tested on four males and four females who found no significant difference in funniness between them. Students (n=100, 50 male, 50 female) were randomly selected for each condition. Students rated the speaker on "23 bipolar adjectival scales," with three distractors, similar to the bipolar scales in the Bryant et al. study (1979). Items included *repulsive-attractive*, *nice-nasty*, and *dull-witty*, etc., which were factored to appeal and intelligence (Tamborini & Zillmann, 1981, p. 429).

Results indicated that students found self-disparaging humor significantly more appealing if the instructor was their gender, and significantly less appealing if they were not. The opposite was true for sexual humor—students found instructors of the opposite gender significantly more appealing when they used sexual humor. Humor did not affect perception of intelligence—in other words, instructor credibility was not affected. The authors suggest determining the majority gender in a course before using either type of humor in order to avoid alienating students. No major limitations were found in this study. In terms of the Superiority Theory, the study further delineates

gender boundaries for acceptable use of aggressive humor by the instructor in the university context.

Shifting from live instructors, another study looked at humor in textbooks. Students who read a chapter from an assortment of textbooks reported they found an increase in humor related to higher enjoyment, but not interest, persuasiveness, or the desire to read more (Klein, Bryant, & Zillmann, 1982). An increase in unintended humor and nonsense humor was related to a decrease in perceived credibility of the textbook author. The researchers suggest, with some surprise, that perhaps humor in textbooks should be limited in order to avoid a loss of credibility (Klein et al., 1982). This may be indicative of the difference in medium between a live instructor and book. Since sections of a book can be skipped, perhaps it's important to ensure only important content is included. Since sections of a lecture cannot be skipped, humor may provide relief within the time constraints of the lecture.

To summarize the studies about perception of instructor humor use, an increase in humor may improve student perception of likeability. Factors such as type of humor, humor content, target of humor, gender of instructor, gender of student, and relatedness to topic may affect perceptions of credibility and appeal. Finally, humor in textbooks should be used with caution.

Classroom Environment

The classroom environment is another factor that can be affected by humor use. Ideal learning environments provide a safe, challenging, and engaging place for students to learn. The Relief Theory dictates that the use of humor should produce a positive

feeling, which may improve the general atmosphere of the class. The following studies examine the effect of humor on the learning environment.

Askildson surveyed students and instructors about linguistic humor in a second-language learning classroom (Askildson, 2005). He surveyed 236 second-language students and 11 instructors. A majority of students (72%) reported "use of humor increased their interest in subject matter (learning a language in this case) from a *noticeable* to a *considerable* degree, while 100% (11) of teacher responses indicated an identical perception" (Askildson, 2005, p. 54). In other words, all 11 instructors perceived that their use of humor increased student interest in the instructional content, and more than 70% of students felt the same. Students and instructors also perceived that humor made the students more relaxed (students: 78%; instructors: 64%), the instructor more approachable (students: 80%; instructors: 82%), and created a more comfortable learning environment (students: 82%; instructors: 100%) (Askildson, 2005). Limitations of this study include lack of validity or reliability of the survey instrument and comparative indices to ensure equality among the students, and more importantly, no measure of current humor usage by the instructor, instructor or student demographics.

In a different study, Berk & Nanda measured students' attitude towards course content (statistics), anxiety towards math, and perceived usefulness of course content with one undergraduate and two graduate nursing statistics courses (total n=142) (Berk & Nanda, 1998). They measured these attitudes at the beginning and the end of a course. The course included humorous strategies like opening jokes, humorous

examples, and a *Jeopardy!*-style review for exams. Results showed all three sections expressed significantly less stress about math and statistics. Two of the three sections expressed significantly less stress about statistics, and all three less stress about the course. One section improved significantly in perception of usefulness of course content. The authors suggest the humor used in the sections improved attitudes towards course content and math. Limitations included the lack of a control group and randomization, particularly when measuring anxiety towards statistics, which may naturally decrease when taking a statistics course. The authors also admit the reduction in anxiety might have been due to the open-book exam policy.

From the instructor's perspective, a survey of high school teachers (n=388) indicated that they used humor more often as a classroom management tool:

> …As a way of putting students at ease, as an attention-getter, as a way of showing that the teacher is human, as a way to keep the class less formal, and to make learning more fun, and not as a pedagogical strategy for increasing student comprehension or learning" (Neuliep, 1991, p. 354).

Using humor to improve the learning environment is a strategy confirmed by Buckman in her dissertation research. Through interviews with college professors known for humor in the classroom (n=10) she found they "constructed very student-centered, positive classroom climates," were aware of how humor affected their connection to students, and were careful about the kind of humor they used (Buckman, 2010, p. iv).

In an online class, an instructor contributed more humorous content in discussion groups, links to humorous YouTube videos, and humorous announcements the second semester she taught a course (Anderson, 2011). When compared to the two sections from the previous fall semester (n=58), the two humorous sections the following summer (n=71) had significantly more discussion postings, higher ratings on course evaluation data related to the online environment, value of content, and recommendation of the instructor to teach further courses, as well as positive comments about the instructor's humor and warmth. This suggests students were more motivated by a more positive learning environment brought about by the use of humor (Anderson, 2011). Limitations of the study include lack of randomization, validity of instruments, and details of humor use.

Perception of the classroom environment may be related to concepts in the ARCS motivational model. For example, Keller describes Satisfaction as asking, "What can I do to help the students feel good about their experience and desire to continue learning?" (Keller, 2010, p. 45). The good feelings and sense of community created by humor in the classroom may serve as a reward for participating in the course. In addition, the concept of relevance is related to a student's sense of connection, not only to the content, but to the learning environment. In addition, the use of humor, particularly in the case of Berk and Nanda's study of statistics, appears to lower anxiety, which may increase confidence (Berk & Nanda, 1998). Thus, perception of the course environment can be seen as related to students' perception of motivation in the ARCS framework.

The studies in this section appear to indicate that humor can improve perception of the learning environment and course content, and may influence engagement. However, many educators are more concerned with the effect of humor on performance in the class. Can jokes help students learn?

Effects of Humor on Learning

In the section on learning of their recent literature review on humor in education, Banas et al. state: "although the research assessing the impact of humor on actual learning is rather mixed, there is substantial empirical evidence that humor can enhance recall and aid learning" (Banas et al., 2011, p. 137).

Positive Effects on Learning

Gibb measured the effect of humor on college freshman in an introductory speech course. The content was related to biology, and the assessment mechanism was the state biology exam. Pre-tests required of all incoming freshman were done the previous semester (Gibb, 1964). Treatments included a recorded audio lecture with three conditions: no humor (Control 1, n=72), the same lecture with humor (Experiment, n=131) and the same lecture with additional repeated content to match the length of the experimental condition (Control 2, n=106). The lecture was about 13 minutes long. Results indicated that the experimental group outperformed both control 1 and control 2 groups on the recall test immediately after the lecture at the $p<.01$ significance level. Three weeks later the same test was given, and the experimental group outperformed the control 1 group at the $p<.05$ level and outperformed the control 2 group but not

significantly. Thus, in this study humor use in the short lecture appears to have improved recall in both the short and long term.

Limitations of Gibb's study include unequal content in treatments. In control 2 points in the lecture were reiterated, which fundamentally changed the content. In other respects, such as the comparison between the control 1 and the experimental group, the study is well designed—the humor is relevant but does not help illustrate content, the study size is large, conditions were alternated throughout the day, and a pretest was used, although it was administered in the previous semester.

Kaplan and Pascoe examined the effect of humor on comprehension and retention in an undergraduate psychology course (n=508) (Kaplan & Pascoe, 1977). Students watched one of four 20-minute videotaped lectures. The lectures taught six concepts. One video included no humor (serious), one included a humorous example for each concept (concept), one a humorous example for three of the six concepts and other non-concept related humor (mixed), and one video included non-concept related humor (non-concept). Participants took a multiple-choice test with 11 items, half based on content from the examples (example-based), and half based on other content in the lecture (non-example based). Students took the test immediately after watching the video, and again six weeks later (Kaplan & Pascoe, 1977).

In the test immediately after the video (n=477), there was no significant difference between groups on example-based items. However, the concept group scored significantly lower on non-example-based items. Interestingly, six weeks later (n=299), the concept group scored significantly higher on the example-based items, with

no significant difference on non-example-based items. In other words, participants in the concept group did significantly worse in recalling the items not related to the humorous examples right after the video, but did significantly better remembering those items six weeks later. Kaplan and Pascoe suggest that the "positive effect of humorous examples only results when test items are based on those particular examples" (Kaplan & Pascoe, 1977, p. 65).

Kaplan and Pascoe's study has a few key limitations. The categorization of concept-related and non-concept-related humor is unclear. Specifically, the example given for non-concept-related humor appears to be related to lecture content, and it is unclear how the examples of concept-related humor are related to lecture content. This is problematic in using this framework (relation to concept) to delineate between items. In addition, their treatments are unequal—the concept group received six content-related humorous examples, the mixed group received three, and the serious and non-concept groups did not receive any. In other words, the instructional content was not equal outside of the humor content. The concept group received more instructional content than the other three, and the mixed group received more instructional content than the serious and non-concept groups. Finally, assessments were unequal. The authors state that six of the 11 items were based on the six humorous examples from the concept version of the video, meaning the mixed group was tested on three items it had seen before and three it had not, and the serious and non-concept groups were tested on items they had not seen before. The concept group scored higher on these items on the test immediately after the video and significantly higher on these items six

weeks later, but that would be expected if they were the only group that received all of that content.

In a study that used humorous educational multimedia, Zillmann et al. created four short educational segments, each between 2-5 minutes, for kindergarten and first grade children (n=70) (Zillmann, Williams, Bryant, Boynton, & Wolf, 1980). They tested the addition of eight 30-second humorous, unrelated clips ("taken from several televised cartoon and Muppet programs") at different intervals: roughly every 100 seconds (fast-paced), and roughly every 200 seconds (slow-paced) (Zillmann et al., 1980, p. 173). They tested for recall of each segment, overall interest and enjoyment, funniness, and attention to the screen. There were five conditions as follows: A) no humor (which was shorter, with no humorous segments), B) fast-paced with humorous inserts, C) slow-paced with humorous inserts, D) fast-paced control with blank screens in the place of humorous inserts, and E) slow-paced control with blank screens in place of humorous inserts. Two children at a time were placed in front of a TV with a selected condition, and aids watched the students' reactions and then verbally gave the assessment. Results indicated that participants recalled more from both humorous conditions (B and C) overall. Interestingly, recall for the first segment was slightly higher for the no humor (A) and fast-paced control (D) conditions, but for later segments the humorous conditions (B and C) were significantly higher. The fast-paced condition (B) improved recall with each subsequent segment. The fast-paced condition had significantly higher enjoyment and interest scores. Their conclusion was that sprinkling

in humor for children's educational programs increases attention and improves learning (Zillmann et al., 1980).

In another study with positive learning gains, Ziv performed two semester-long controlled experiments, one in statistics and one in psychology (Ziv, 1988). Both followed the same design, utilizing one control and one experimental section taught by the same teacher during the same semester. The instructor added three to four humorous concept-related examples per class in the experimental section. Both sections took a 50-item multiple-choice exam at the end of the semester. Both courses had roughly equivalent numbers of participants in the two sections (statistics: control=79, experimental=82; psychology: control=67, experimental=65). In both courses, the sections with humorous examples scored significantly higher on the exam, which Ziv attributed to his strategy for humor inclusion: 1) explain a concept, 2) illustrate the concept with a humorous example, and 3) review the concept (Ziv, 1988, p. 10).

Ziv's study has a few limitations. First, it lacks a pre-test, which was feasible in a study of this length without conditioning students unfairly to the assessment. It also lacks randomization. Like Kaplan & Pascoe, the treatments were unequal. Without comparable non-humorous examples, students in the control sections missed three to four conceptual examples per class that the experimental sections received. Whether or not the examples were humorous, the experimental sections received more content-related information, which may explain their higher scores on the assessment.

A similar problem occurs in Kothari, Rana, and Khade's study of undergraduates in an international marketing course (1993). Results of the spring term are discussed

here (the pair of fall term sections were described as unequal by the authors). In the spring term, two sections of the same course were taught by the same instructor. The control section (n=29) used no humor, and the experimental section (n=26) received a short monologue at the beginning of class using recent events related to course content. For example, an instructor related a mistranslation of a beer slogan, "Turn It Loose," into Spanish, which rendered it to mean "Our beer causes diarrhea," in order to exemplify communication problems in marketing (Kothari et al., 1993, p. 39). The instructor connected the monologue to course content and led a brief discussion about it. No other interventions were reported. Grades for the humorous section were significantly higher (81%) than the control group (72%) (Kothari et al., 1993, p. 40).

Limitations of the study include those mentioned earlier in Kaplan & Pascoe and Ziv's studies: the experimental group received additional examples, and in this case, group discussion, giving them an educational advantage unrelated to the variable of humor. As in Ziv's study, no pretest was performed, nor were students randomized. Finally, the use of final grades as assessment measures confounds instructional gains from only the items to which the humor was applied. Students may have appeared to perform well in the course regardless of their experience with the instructional intervention.

The final example of a study with positive learning gains comes from Ghaffari and Mohamadi (2012), who examined the effectiveness of a humorous context on Iranian students learning words in English. They filtered down to 77 participants by their score on a standardized English placement test—students with too low or high a score

were removed from the study. In a clever design move, they separated out a pilot group (n=19) to evaluate humorous materials. The rest of the students were divided into a humor group (n=24), a non-humor group (n=17), and a comparison group (n=17), all spread across two or three classes. The pilot group rated humorous texts gathered from the Internet and texts below a certain threshold were dropped, leaving 20 to use. These jokes became the instructional content, as the pilot group underlined words they did not know from the jokes as the central focus of learning. These words were given to the participants in the other three groups and words known by even one participant in the other groups were removed, leaving 62 vocabulary items.

For the posttest, 124 questions were developed for the words: 62 receptive-mode multiple-choice questions and 62 productive-mode fill-in-the-blank items. Receptive mode can be defined as passive understanding without having to generate content, whereas productive mode requires the learner to generate answers on their own (British Council, 2014). The 124 items were given to two similar groups outside the treatment, with one group receiving the receptive items and the other the productive items, and items within a range of discrimination and difficulty were included in the final group of 98 questions.

The punch lines of the 20 humorous texts were changed for the non-humor group and examined by native English speakers, who thought only three did not appear to sound natural, thus both groups had almost identical contexts in which the words were used.

These 62 words were used in the instruction during seven sessions (three times a week for three weeks). The humor group learned the words in the context of the intact humorous texts, while the non-humor group learned the words in the context of the modified, non-humorous texts, and both groups practiced the words within their context for a half hour during each session. Learning sessions were followed by various assessments like true/false or fill in the blank (Ghaffari & Mohamadi, 2012). In the session following the treatment, 20 productive assessments were given to all three groups, followed by 20 receptive assessments. Three weeks later a second posttest was administered in which they were given assessments for different words, again 20 productive and 20 receptive (Ghaffari & Mohamadi, 2012).

A one-way ANOVA indicated that the humor group significantly outperformed the non-humor group on receptive assessment at the p=.001 level, and on productive items at the p=.002 significance level. The second posttest three weeks later followed the same pattern again on both receptive and productive items, where the humor group outscored the non-humor group at the p=.001 significance level. Overall, participants scored higher on the receptive items than the productive items. The comparison group in the study used no context to practice the vocabulary words, used less time in the lessons, and, interestingly, outperformed the humor group significantly on all tests, but was not described in detail because the instructional approach does not fall within the purview of the current study.

There is much to admire about Ghaffari and Mohamadi's study. While the selection process for each group was not clear and the sample size was modest, every

other aspect of the study appears to have been well designed: selection of the humor, design of parallel texts, the test and retest approach. In addition they eliminated confounding factors such as students with previous knowledge, previously known content, and overly easy or difficult assessment items. They cleverly avoided the problem of unequal treatment by making the humor itself the content for one group and removing the resolution from the incongruity-resolution structure for the other. The percentage of content the punchline represented was not described, therefore, depending on its proportion of the total context, unequal treatments could be implied. An interesting aside is that informal feedback from the participants indicated that students in the humor group rehearsed the jokes to memorize them, which may have improved learning (Ghaffari & Mohamadi, 2012). Aside from its brief limitations, the results from this study indicate a hopeful direction for the use of humor, if only in the ESL (labelled in their study as "EFL") classroom. This study represents the only rigorously designed research found showing improvements in learning gains with humor incorporated into instruction.

No Effects on Learning

While the studies just described focused on positive outcomes, other studies show no improvement in learning. For example, in a study done with students in a professional speaking class, Gruner (1967) randomized students and played them an audio speech. Two sections of a class were randomized into four groups with the same two conditions: the control group (n=64) heard the speech without humor, and the

experimental group (n=64) heard the speech with additions of selected humor. Gruner added four humorous items in the introductory paragraph of the speech and three more in the second paragraph. He added five additional items evenly through the rest of the speech (the length of the speech was not specified). Gruner measured learning with a 25-item multiple-choice test, whose validity he ensured via a panel. He found no significant difference in their retention scores (Gruner, 1967).

Gruner's study was well-designed. He took additional precautions, including using a panel to determine relatedness of learning assessments, and ensured that the experimental version of the speech was perceived as more humorous (it was) with a bipolar instrument developed by Smith (1959). Limitations of the study include the lack of specificity about the type of humor and its relation to the content.

Gruner did an additional study with the same speech (n=144), this time with four conditions: humorous-interesting, serious-interesting, humorous-dull, and serious-dull (Gruner, 1970); interesting was defined by the Flesch Human Interest scale. Twenty-two humorous items were added to the speech, and the interesting speech was recorded with an enthusiastic voice, the dull speech with a monotone voice. Students found the serious-interesting speech the most interesting, and more interesting than the interesting-humorous speech. Gruner found that learning improved along interest but not along humor lines (Gruner, 1970). The limitations described in the review of this study in the Instructor Evaluations section above apply to the learning results as well: since the dull speeches were performed differently than interesting speeches, this may

have created a confounding variable, an idea pointed out by Mayer in the Voice Principle (Mayer, 2009).

Negative Effects on Learning

One study found that humor negatively affected learning. In a study performed on visitors to a planetarium, Fisher added a single line of humor to 10 of 20 concepts in a recorded presentation (Fisher, 1997). Participants (n=495) were visitors to the planetarium over the age of 18 with a wide demographic background. After a 5-minute live introduction, he showed humorous and non-humorous versions of a 15-minute pre-recorded presentation. Humorous additions were added roughly every 90 seconds. For example, when pointing out Saturn with the planetarium's pointer, the narrator added, "You won't see this arrow in the sky outside. Trust me," (Fisher, 1997, p. 708). The non-humorous version had silence in the place of the humorous additions. Immediately after the presentation participants took a 20-item test based on the non-humorous script of the presentation. Participants who watched the non-humorous presentation (n=250, mean=13.6) scored slightly but significantly higher than those who watched the humorous presentation (n=245, mean=12.8). Fisher postulates that too much humor may have been added, or at too fast a pace, confusing the audience. This connects to the ideas of careful use of humor to avoid distraction, as suggested earlier, signifying that a moderate approach may be most successful (Earleywine, 2010; Keller, 2010; Mayer, 2014).

This study was well designed with few limitations. Fisher categorized the humorous additions as content-related according to Kaplan & Pascoe's categorization, though a review of the humorous content does not confirm that they belong in that category (Fisher, 1997, p. 707). While Fisher appeared to misunderstand this designation, it was a strength of the study because the humorous content did not relate and the informational content was equal between treatment. A helpful addition to the study, particularly in this context, might have been measuring participants' perception of the two versions. A more entertaining community planetarium presentation may have been a more positive informal educational experience, even at the loss of one knowledge point.

Summary of Effects on Learning

A persistent limitation in studies related to humor and learning is unequal treatments between conditions. One of the best practices in humor usage in the classroom is using examples related to the content (Bryant et al., 1980; Ziv, 1988), which is very difficult to implement in a study. Unless examples are equal between conditions (except for the addition of humor), the comparison is not between humor and non-humor, but two different types of examples, one of which happens to be humorous. As an instructional strategy humorous examples have value, but the combination of an interesting, humorous example confounds the examination of humor as its own entity. It does add to the research on the power of examples in learning (Gruner, 1970). However, without more studies with positive outcomes and the level of research design

rigor displayed by Ghaffari & Mohamadi (2012), it's difficult to conclude if the literature indicates that humor improves learning one way or the other, indicating that additional, rigorously-designed research should be conducted.

Strategies for Humor in Education

Shifting from the question of whether humor can improve learning, we now focus on the question of how humor can improve learning, discussing specific strategies for incorporating humor into the classroom.

Humor Placement and Amount

Ziv (1988) suggests using humor three to four times per class period, but not the same number of jokes in every class, and in some classes no humor at all. Keller confirms the need for using humor judiciously (Keller, 2010). The beginning of class appears to be a good time to include humor (Beebe, 2007; Keller, 2010; Kothari et al., 1993). Tests may not be a suitable place to include humor because they are not a playful environment (Torok, McMorris, & Lin, 2004); neither is in the middle of problem-solving because it is not perceived as a playful environment (Rothbart, 1996).

Humor Content

Research suggests that humor content is more effective when related to course content since humorous examples may help to illustrate points (Earleywine, 2010; Kaplan & Pascoe, 1977; Keller, 2010; Ziv, 1988). Gilliland and Mauritsen add, "classroom humor is most effective when it is pertinent to the situation, personable, original, and contains something of the personality of the teacher or the child" (1971, p. 754).

Ziv introduced a simple 3-step process for using jokes related to content in a classroom (Ziv, 1988). First, teach a concept. Second, share a joke or cartoon that illustrates the concept. Third, review the concept in light of the humorous example. Ziv also created a training program for instructors on how to use humor (Ziv, 1988). The workshop included assignments to find relevant humor for the topic, and instructors who participated in the workshop (12 out of 60 who applied) were handpicked based on their responses to a humor styles questionnaire (Ziv, 1988). This suggests two ideas: humor can be prepared beforehand with careful planning, and not everyone is equally disposed to use humor regularly to positive effect.

Because of the potentially positive effects of humor on the classroom environment, it is important that everyone feel safe. Thus, content that targets specific students, or is sexual and aggressive, including jokes made at the expense of gender, race, or sexual orientation, may alienate students (Hativa, 2000; Korobkin, 1988; Wanzer, Frymier, Wojtaszczyk, & Smith, 2006). The case for self-deprecating humor is less clear. This is a difficult issue for the humor-user, since aggressive humor has been shown to positively influence credibility but alienates students, while self-deprecating humor may decrease credibility (Andeweg, Gagestein, de Jong, & Wackers, 2011; Tamborini & Zillmann, 1981; Zilmann et al., 1980).

Humor in Library Instruction

Humor has been suggested in library instruction as a means of lightening what may be perceived as dry topics; for example, when searching the online catalog relief comes through pointing out funny or bizarre titles (Petry, 1998). Library instruction, like

other kinds of teaching, may benefit from adding humor strategically (Walker, 2006), though it may not be considered a key part of being an effective instructor (Arnold, 1998).

Conclusion

This chapter focused on humor's role in motivation, how it affects instruction, and how it relates to multimedia instruction. Humor has been shown to improve perception of the instructor, improve perception of the classroom environment, and have mixed effects on student learning. The following chapter will describe the approach of the current study to determine the effect of humor on learning and motivation.

CHAPTER 3 METHODS

Review of Research Purpose

The purpose of this study is to examine the effects of adding humor to an instructional video on learning and motivation. The research questions for this study are as follows:

R_1 – Does adding humor to an instructional video influence learning?

H_1 – Adding humor to an instructional video will improve learning.

R_2 – Does adding humor to an instructional video influence motivation?

H_2 – Adding humor to an instructional video will improve motivation.

R_3 – Does the gender of the student influence learning or motivation?

H_3 – The gender of the student will not influence learning or motivation.

Humor has been shown in some conditions to improve perception of the instructor without diminishing their credibility (Gruner, 1967, 1970). It has also been shown to improve both student and instructor perception of the class environment (Anderson, 2011; Askildson, 2005; Berk & Nanda, 1998; Buckman, 2010). Previous studies have shown mixed results in terms of recall or application, with the most rigorous studies showing no significant difference in learning (Ghaffari & Mohamadi, 2012; Gibb, 1964; Kaplan & Pascoe, 1977; Kothari et al., 1993; Zillmann et al., 1980; Ziv,

1988). Finally, studies have shown that gender may affect perception of humor. This study seeks to improve on many of the existing studies with a more rigorous experimental approach.

Theoretical Framework

This study uses a mixed-methods approach in an experimental pretest, posttest, and second posttest control-group design. Four different data were collected. First, learning assessments in the form of open-ended test questions were collected as qualitative data. They were scored and thus converted to quantitative data. Second, a motivation assessment in the form of a survey (the IMMS) collected quantitative, Likert-style data. Third, perception of humor was collected as a survey (HMC) with quantitative, Likert-style data. Fourth, perceptions of the instructional video were collected via open-ended qualitative questions. Along with the IMMS and HMC, because the learning assessments were converted to quantitative form and are reported with statistical analysis, the study may be described as QUAN + qual approach (Johnson & Christensen, 2012), with an emphasis on quantitative data. The rationale for this mixed-methods approach is triangulation of the largely quantitative data with the brief qualitative data. This can ensure that all data corroborate, and the study does not miss key variables that might explain the results (Greene, 2007).

In terms of a theoretical framework, the study connects a motivation theory with a multimedia theory. Humor is a strategy in the Attention component of Keller's ARCS model of motivation (Keller, 1987, 2010), and motivation is a component of Moreno's

CATLM model of multimedia learning (Moreno, 2006). This study traces the effect of humor, an instructional motivation strategy, on overall motivation, a factor which may influence short-term and long-term learning.

Pilot Studies

Three pilot studies were conducted before the final study with a significantly smaller number of students. The studies were conducted to ensure that the learning assessments, video, and humor manipulation tools were aligned with the research objectives. They will be referred to as Pilot 1, Pilot 2, and Pilot 3. The pilot studies took place a few weeks before the final study, during the winter break between the fall 2013 and spring 2014 semesters.

Context

Both the pilot and final studies were conducted with undergraduate students at Boise State University in 2013-2014.

Pilot Study Context

The pilot study surveyed undergraduate employees of the library, who were asked to participate voluntarily for a $5 gift card for coffee. They took the surveys before and after Christmas break in 2013-2014, between semesters.

Final Study Context

Final study participants came from two courses during the spring semester of 2014. The first course, University 106 (U106), was a 1-credit information literacy course for undergraduates with three to four sections taught by library faculty every semester.

It is an eight-week course with two sections the first eight weeks of the semester (Mod1) and two sections the second eight weeks of the semester (Mod2). Course content includes determining the validity of research information, searching academic journal databases, finding articles and books in the library, and writing research questions. The second course, Communication 302 (COMM 302), was a 3-credit research methods course for upper level communication undergraduates, with one section. It was taught by a professor in the Communication Department and focused on "historical, critical, descriptive, and experimental research methods and tools in communication. Students design, conduct, report, and evaluate research projects" ("COMM 302," 2014).

Students in both courses were promised 10 extra credit points in their course for participating in the study. An alternative assignment was provided for students who wanted to earn the extra credit but did not want to participate in the study.

Students in U106 received varying amounts of the 10 points depending on how many of the three surveys they completed. For example, students received two points for participating in each of the first and third surveys, which took an average of 10 minutes to complete, and six points for participating in the second survey, which took an average of 30 minutes to complete. In COMM 302 the instructor required students to complete all three studies to receive the 10 extra credit points.

As mentioned, U106 had multiple sections, including both face-to-face and online. In Spring 2014, U106 was taught face-to-face in one section and online in three sections. Students from all four sections were invited to participate in the study. Three

different instructors taught the four sections (two of the online sections were taught by the same instructor). COMM 302 was taught face-to-face by one instructor.

Table 3.1

Courses, Sections, Instructors, and Online Status of Participating Courses

Semester	*Course or Participants*	*Sections*	*Instructors*	*Location*
Fall 2013 (pilot)	Student employees	--	--	Online
Spring 2014	U106	3	2	Online
	U106	1	1	Face-to-Face
	COMM 302	1	1	Face-to-Face

Procedure

This section will explain the procedures used in recruiting, research design, instruments, and data analysis.

Recruiting

Recruiting methods in the pilot study differed from those used in the final study.

Pilot Study Recruiting

Student employees in the pilot study were invited to participate via email with the approval of their supervisor. The email explained the research need and promised a $5 gift certificate for coffee if they completed the surveys. The email contained a link to the survey, which included a video explaining the research, a consent form, and the research materials.

Final Study Recruiting

In the final study the manner in which students were contacted depended on their course and section. U106 online students were notified of the survey with an announcement on the course homepage. U106 face-to-face students were invited by the researcher during class, and given a link from the course homepage.

U106 students were asked to participate at different times in the semester. Mod1 students (one section online, one section face-to-face) were invited to participate during the second week of class. Students in Mod2 (both online) were invited to participate halfway through the semester, a preference expressed by the instructors, one of whom wanted to give students time to adjust to the course and one who was assigned to teach the course shortly before it started because of an unforeseen situation.

The COMM 302 students were invited to participate roughly midway through the semester by their instructor, and received an email and announcement on their homepage as a reminder.

All recruitment efforts included a brief video of the researcher explaining the reasons for the study, payment for participating, risks and benefits, and an explanation of the process.

Although timing between sections and courses differed, every participant went through the same study with the same surveys and instructional materials. The only difference in the research experience for any participant was the instructional video:

students in the control group saw a video with no humor and students in the experimental group saw the same video, with humor added.

Participants

Pilot Studies

Students who participated in the pilot studies worked part-time for the Boise State University Library. Their roles in the library were to check out items to patrons, including renewing books and collecting fines. Their years in school and majors varied. Their regular tasks at the library did not include, nor hinge on, special training or preparation in the content in the tutorial, nor was it part of their job training.

Pilot 1 had four participants, Pilot 2 seven, and Pilot 3 four. Participants were fairly evenly distributed between the control and experimental conditions in the pilot studies, and females (n=9) outnumbered males (n=6).

Table 3.2

Pilot 1, 2, and 3 Gender and Condition Distribution

Pilot 1	*Control*	*Experimental*	*Total*	*Percent*
Male	0	0	0	-
Female	2	2	4	100%
Pilot 1 Total	2	2	4	
Pilot 2	*Control*	*Experimental*	*Total*	*Percent*
Male	2	2	4	57%
Female	1	2	3	43%
Pilot 2 Total	3	4	7	
Pilot 3	*Control*	*Experimental*	*Total*	*Percent*
Male	1	1	2	50%
Female	1	1	2	50%
Pilot 3 Total	2	2	4	
Overall Total	14	16		

Demographic data were collected for Pilot 1 and 3, but for Pilot 2 only gender was collected due to an oversight. Pilot students were somewhat evenly distributed between genders (40/60, male/female). Half were between the ages of 21-23, with 38% older than the age of 24. Most (87%) reported studying five or more hours a week. Majors were distributed somewhat evenly. In terms of year in school, most students (75%) were a junior or senior.

Table 3.3

Pilot 1, 2, and 3 Demographic Data

	Pilot 1	*Pilot 2*	*Pilot 3*	*Total*	*Percent*
Gender					
Male	0	4	2	6	40%
Female	4	3	2	9	60%
Age					
18-20	0	--	1	1	13%
21-23	3	--	1	4	50%
24-25	0	--	1	1	13%
Over 25	1	--	1	2	25%
Hours of Study/Week					
4-5	0	--	1	1	13%
5 or more	4	--	3	7	87%
Major					
Accounting	1	--	0	1	13%
Arts	0	--	1	1	13%
Business	2	--	0	2	25%
English	0	--	1	1	13%
Sciences	0	--	2	1	13%
Sociology	1	--	0	1	13%
College Year					
Freshman	1	--	0	1	13%
Sophomore	0	--	1	1	13%
Junior	2	--	0	2	25%
Senior	1	--	3	4	50%

Note: -- represents data not collected for Pilot 2

Final Study

A total of 142 students were invited to participate in the study, 100 from U106 and 46 from COMM 302. As might be expected, not all students opted to participate, and the number of those who did participate decreased as the study progressed. The final number of participants who completed enough of the study to be included (at least the pretest and posttest) from both courses was 55: 20 from all four sections of U106 and 35 from COMM 302.

Participants were divided roughly evenly between conditions (53%/47%, control/experimental), and the majority of participants were female in both courses (29%/71%, male/female).

Table 3.4

Final Study Gender and Condition Distribution

	Control	*Experiment*	*Total*	*Percentage*
COMM 302				
Male	5	5	10	29%
Female	12	13	25	71%
COMM 302 Total	17	18	3	64%
U106				
Male	4	2	6	30%
Female	8	6	14	70%
U106 Total	12	8	20	36%
Overall Total	29	26	55	
Overall Percentage	53%	47%		

The majority of participants (70%) were between 18-23 years old. Most (71%) studied four or more hours a week. Communication majors made up 59% of the participants, likely because COMM 302 is an upper-division course. Marketing students were the next highest percentage of majors at 22%, likely because U106 was required by the marketing department. Many were in their junior (40%) or senior (36%) years, with fewer freshman (11%) and sophomores (11%).The majority from from Idaho (91%), with a few from other surrounding states (

Table 3.5

Final Study Demographic Data

	COMM	*U106*	*Total*	*Percent*
Gender				
Male	10	6	16	29%
Female	25	14	39	71%
Age				
18-20	9	10	19	35%
21-23	12	7	19	35%
24-25	4	0	4	7%
Over 25	9	3	12	22%
Hours of Study per Week				
0-1 hours per week	0	1	1	2%
1-2 hours per week	2	1	3	5%
2-3 hours per week	3	2	5	9%
3-4 hours per week	5	2	7	13%
4-5 hours per week	11	4	15	27%
5 hours or more per week	14	10	24	44%
Major				
No Major Given	0	2	2	4%
Business	0	2	2	4%
Communication	32	0	32	59%
Criminal Justice	0	1	1	2%
Economics	0	1	1	2%
Journalism	1	0	1	2%
Marketing	0	12	12	22%
Public Relations	2	0	2	4%
Respiratory Care	0	1	1	2%
College Year				
Freshman	0	6	6	11%
Sophomore	2	4	6	11%
Junior	17	5	22	40%
Senior	15	5	20	36%
Graduate Student	1	0	1	2%
State of Residence				
California	5	2	0	4%
Idaho	14	16	34	91%
Nevada	32	1	0	2%
Washington	48	1	1	3%

Pilot and Final Study Participant Comparison

The pilot study participants varied from the final study participants in a few ways. The pilot studies balanced genders more equally, stayed more within the 21-23 year old range, reported more hours studied, had a wider range of majors, and included more junior level students. Over 90% of the final study participants were from Idaho.

Research Design

Pilot Designs

In the three pilots there was no pretest or second posttest; students simply viewed the video and then took the posttest. Students took the surveys online without ever having direct contact with the researcher. Pilot 1 instruments, including the instruction and assessment, differed from Pilots 2 and 3. In addition, the order of events changed. In Pilot 1 students viewed the recruitment video then watched either the control (no humor) or experimental (humor) video. In Pilots 2 and 3 students indicated their gender before viewing either video. Participants in all three pilots then completed the learning assessment, the IMMS, humor manipulation items, and qualitative questions. Finally, participants in Pilot 1 and 3 filled out a demographic survey.

Final Study Design

The final study used a randomized, experimental pretest-posttest design with a delayed second posttest. Thus students took the same learning assessment three times, three weeks apart each time. The first learning assessment was the pretest. Three weeks later, immediately after the instructional intervention, students took the same

assessment, a posttest. They also took additional surveys at this time. Finally, three weeks later, students took the learning assessment a final time as a second posttest. The three week delay for the second posttest was an approach used in other studies (Ghaffari & Mohamadi, 2012; Gibb, 1964; Kothari et al., 1993).

Table 3.6

Treatment Timing and Shorthand

Timing	*Shorthand*	*Treatment*
Start of study	Pretest	Learning assessment
3 weeks later	Posttest	Instructional video, learning assessment, IMMS, humor manipulation survey, demographic survey, open-ended perception survey
3 weeks later	Second posttest	Learning assessment

Sampling

This study used a convenience sample of two courses at Boise State University. Participants were randomly divided into control and experimental groups. However, the sampling technique changed after Pilot 1. In Pilot Study 1, students were randomly divided into control and experimental groups. In Pilot Studies 2 and 3 and the Final Study, a block sampling technique was used. Before students participated in the instructional intervention they were asked for their gender, which was used to divide them equally into control and experimental conditions along gender lines. Block grouping can be used when "the plots are not all reasonably similar" so that "plots within each block are alike" (Bailey, 2008, p. 53). Studies have indicated that student gender and instructor gender may influence the perception of humor (Bryant et al., 1980; Tamborini & Zillmann, 1981). For example, Bryant et al. (1980) found that the gender of the instructor significantly affected student perception of effectiveness when humor was used frequently. Tamborini and Zillman (1981) found that the effectiveness of self-disparaging humor changed depending on the gender of the instructor and student. In the current study, because the instructor in the instructional video was male,

the block sampling technique was used to ensure that an equal number of males and females were in each condition, so differences in perception by gender could be examined.

Instruments

This study includes several instruments. They will be described below along with how they were modified based on pilot data.

Learning Assessment

In Pilot 1 the learning assessment consisted of five knowledge-level multiple-choice questions and 1 comprehension-level matching question. These items were created by the researcher and sent to the instructors for the U106 course (content experts in this area) for review.

The learning assessments changed dramatically starting with Pilot 2, based on two factors. First, it was felt that the smaller number of data points generated by a small number of multiple choice questions may not have adequately distinguished between more subtle degrees of learning. Second, because the study so closely follows the research design established by Mayer (Mayer & Moreno, 2003) the researcher opted for similar open-ended questions.

Accordingly, in Pilots 2 and 3 and the Final Study, the learning assessment removed the five multiple-choice and replaced them with 10 short-answer questions. Questions were divided into three levels: knowledge (4), comprehension (3) and application (3), following the taxonomy of learning levels established by Bloom (1956), and as explained earlier, corrollary to Mayer's concepts of retenion (knowledge) and

transfer (comprehension and application) (Mayer, 2002). Knowledge-level questions were meant to assess recall; for example, “Explain how to summarize a source.” Comprehension-level questions were meant to determine if participants could distinguish between ideas; for instance, “Please explain the difference between summarizing and paraphrasing.” Finally, application questions aimed at determining if students could apply the concepts to a novel situation; for example, being given a sample text and asked to provide a summary.

Initially, learning assessment items were to be eliminated based on the 30-70% rule described by Seyer & McBeath (1981). However, based on feedback from the pilot study during the proposal defense, it was decided that all questions could be included.

Assessments were ordered from easiest to most difficult, which enabled the study to avoid giving students answers which appeared in the text of later questions. For example, students were asked for three ways to include a source in a paper before they were asked to give an example of each way of including a source.

Demographics

The demographic survey asked for information such as gender, age, major, and hours studied per week. It did not change between the pilots and the final study. The demographic survey can be found in Appendix C.

Motivation Survey

The motivation assessment did not change between the pilots and the final study. Motivation was measured with the Instructional Materials Motivation Survey (IMMS), which “was designed to measure reactions to self-directed instructional

materials" and can be used for computer-based instruction (Keller, 2010, p. 277). In this case the instrument was used to determine the motivational effect of the instructional videos. The IMMS has 36 questions, broken into four subscales, one for each part of ARCS. Keller suggests that it can be changed to fit specific instruction; for example, changing the wording in the questions from "this lesson" to "this video," which was done for this study. The questions can be found in Appendix D. In a test administered to 90 undergraduates in two undergraduate classes, the internal consistency estimates for the Attention scale were .89, Relevance .81, Confidence .9, Satisfaction .92, and.96 total, which are acceptable for this study (Keller, 2010).

Table 3.7

Cronbach's Alphas for IMMS Survey

Category	α	Number of Items
Attention	0.89	12
Relevance	0.81	9
Confidence	0.90	9
Satisfaction	0.92	6
Overall	0.96	36

Humor Manipulation Check (HMC)

Students were given a survey to determine if they perceived that the video in the experimental condition was more humorous than the video in the control condition. As with other instruments, a different tool was used for Pilot 1 than was used in Pilots 2, 3, and the final study.

Several studies (Bryant et al., 1979; Gruner, 1967, 1970; Kaplan & Pascoe, 1977) used two items related to seriousness developed by Smith (1959). These items were designed for live or recorded speakers, and include two 7-point bi-polar scales (serious-humorous, heavy-light), with the second item reversed. The Pilot 1 instructional video resembled a lecture with video of an instructor and PowerPoint slides, thus the tool appeared to be a good fit to measure its humor. However, when the instructional video was changed in Pilots 2, 3, and the final study, it began to look less like a traditional lecture and more like an animated conversation. It was decided that a tool used for a different style of video would be more effective.

Pilots 2, 3, and the final study employed a tool used in advertising to determine if commercials were perceived to be humorous. It consisted of three 7-point bi-polar scales: “funny/not funny, humorous/not humorous, and amusing/not amusing” (Cho, 1995, p. 192), with the first item reversed. Cho’s study was found to have a coefficient alpha of .96. The scale can be found in Appendix E.

Open-Ended Questions

The open-ended questions in Pilot 1 were given to both the control and experimental conditions. They were as follows: “Are there changes that you would make to the video you watched to make it a better learning experience?” and “Can you give an example of something you learned from a video online in the past six months?”

Changes were made to the video in Pilot 2 based on the responses to the first question. However, the second question regarding past learning from instructional videos did not focus enough on humor to elicit responses that aided in determining the participants’ perception of humor in instructional videos. For example, one student wrote, “Love learning from videos…videos are very good for me as I am a visual person.” While the comment reinforced the use of videos in instruction, it did not help determine the student’s perception of humor in videos.

In Pilots 2, 3, and the final study, all participants who viewed both the control and experimental videos were asked one question: “What changes would you make to the video you watched to make it a better learning experience?” Participants who viewed the experimental (humor) video were asked three additional questions focused on the humor of the video, whether it related to the educational content, and their

experience with humor in other instructional videos they'd seen. These questions appeared to be more relevant and were used to drive changes in the instructional videos. These questions can be found in Appendix F.

Instructional Intervention

The instructional intervention, a brief video, was written and produced by the researcher. The content focused on three strategies for incorporating sources in a research paper: summarizing, quoting, and paraphrasing. The instructional video went through two iterations based on feedback from the pilot studies.

Pilot Study 1 Video

In the first pilot study, the video (Video 1) depicted an instructor giving a lecture through PowerPoint on the topic, including a webcam video of him at various points. The humorous version used the premise that the instructor's child had added content to the PowerPoint that disrupted its flow and the instructor's concentration. For example, requests to go to the store and buy toys were added to the text of the examples, interrupting the flow of the lecture. The concepts of summary, paraphrasing, and quoting were explained and then applied to one example, a paragraph from the Declaration of Independence for the United States of America. The non-humorous version of this video was five minutes long and the humorous version was over six minutes. Results from the HMC showed no differences between conditions. The open-ended questions in Pilot 1 indicated that the humor video was "cheesy" and that the instructor's voice was "monotone."

Pilot Study 2 Video

Based on the feedback for the video in Pilot 1, the video for Pilot 2 was changed dramatically to try to improve motivation, humor, and participant comments. Instead of a lecture with an instructor, the format was changed to a cartoon conversation between two characters, an unnamed teacher and Joe, a student. It used a discussion approach between the characters. Humor stemmed from Joe's character, his misperceptions and his obsession with sharks.

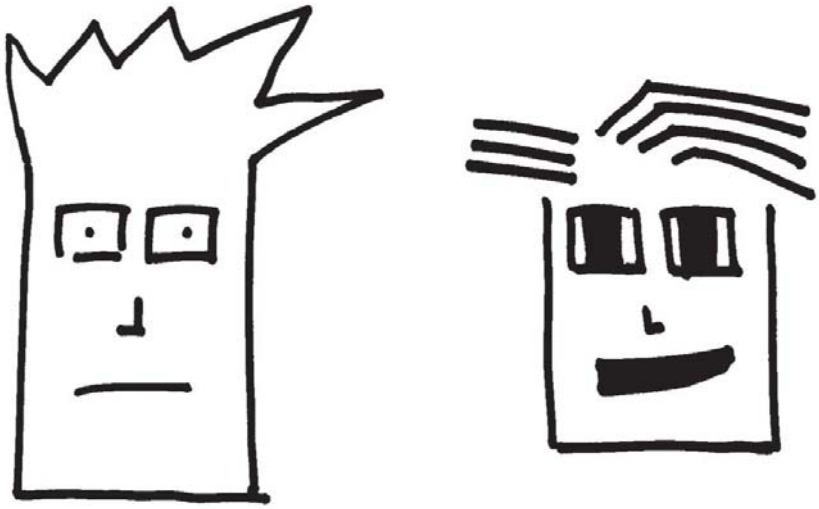

Figure 3.1 Screenshot of Joe and the teacher, from the instructional instrument

The example used by the teacher in Pilot 1, the Declaration of Independence, was changed in Pilot 2 to interesting facts about sharks. This was done to use a subject related to the humor in the video and use shorter example text, based on feedback from Pilot 1: "The words of the Declaration of Independence were kind of fuzzy so I was not able to read along, so maybe larger text would have been nice." In addition, one more

example of each concept was given, with Joe applying the concepts he'd learned, using the Pledge of Allegiance as sample text. This decision was made to make the instruction more sound, giving students a model of the application questions they would answer in the learning assessment. The videos were also shortened to three minutes for the non-humorous version and four and a half minutes for the humorous version. However, even with these changes, students in the humor group did not find the experimental funnier than the control video. Feedback from the open-ended questions indicated "just to enough to make you chuckle without being over the top or seeming like it was forced" and that "Sharks were used as an example for citing."

Pilot Study 3 Video

Two changes were made for the third video. First, noting the comment regarding a connection between the example of sharks and the humor around them, the third video changed the example to be more generic, with the concern that the interesting example would confound the effect of humor in the video. Gruner (1970) found that interesting examples had as strong an effect as humor in perception of the instructor and interest in the content. The example using facts about sharks was replaced with a generic sentence, for example, "Here is the main point in my own words (Author, Year)." In addition, to improve the humor levels, when Joe refers to different concepts related to his obsession with sharks, images were used to illustrate and emphasize his ideas. For example, a poster of a movie Joe refers to, *Sharknado*, is shown on screen as he talks about it.

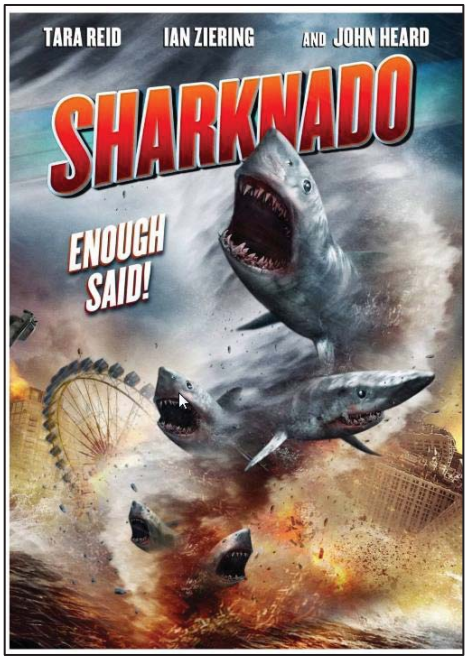

Figure 3.2 Screenshot of Sharknado poster, added for humorous effect

Participants in the humor group found the video slightly funnier than students in the control group. The slight change in higher perception of humor of the experimental video was encouraging, and this video was used in the final study. The video revision also considered how much humor was used and where it appeared.

Humor Placement and Amount

Humor placement was affected by studies indicating that humor used at the beginning of class appears to be effective, (Berk & Nanda, 1998; Kothari et al., 1993), and that starting with a lighthearted tone can suggest to students a more playful state (Apter, 1982). Humor in the video was added at natural break points in the flow of the tutorial rather than in the middle of examples or concept explanation where it could potentially be distracting. Since too much humor may distract students from the content

(Fisher, 1997; Keller, 2010; Mayer, 2014), this video followed Ziv's (1988) suggestion of three to four jokes per class session and applied it to the video, resulting in four humorous interludes in the experimental video.

Both the non-humorous video and humorous video contain the same non-humorous content performed in the same way in an attempt to avoid the potentially confounding effect of different intonations in different conditions seen in other studies (Gruner, 1970).

The humorous dialogue occurs in the pattern indicated in the figure below.

Greeting and introductions

Discussion of Joe's paper topic - Sharknado

Overview of citing sources, emphasis on citing author

Explanation of "common knowledge" concept

Joe explains his obsession with sharks

Explanation of summarizing

Generic example of summarizing

Explanation of quoting

Generic example of quoting

Explanation of paraphrasing

Generic example of paraphrasing

Joe and teacher argue about text used for example

Review of sample text: Pledge of Allegiance

Joe summarizes Pledge of Allegiance

Teacher reviews Joe's summary

Joe quotes Pledge of Allegiance

Teacher reviews Joe's quote

Joe paraphrases Pledge of Allegiance

Teacher reviews Joe's paraphrase

Final advice and end

Joe gives the teacher shark socks and they both agree that the socks are cool

Figure 3.3 Outline of humor placement within instructional video. Humorous interjections are in bold italics.

Humor Content

The additional dialogue in the humorous version frames the learning character, Joe, as a quirky person obsessed with sharks and the made-for-TV horror film *Sharknado* (2013), which will be the research topic for his paper. Humor is derived from the incongruity in Joe's odd behavior, interests, and misunderstandings of social cues. This approach falls within the appropriate humor usage categories of "teasing students," "creative language," and "role play" described by Wanzer et al. (2006). The teacher expresses frustration but never openly criticizes or denigrates Joe, nor does he attack appearance, religion, gender, race, or other sensitive topics in an attempt to avoid aggressive or offensive humor (Banas et al., 2011; Wanzer et al., 2006). However, the depiction of Joe as a sometimes ludicrous character falls within the Superiority Theory of humor, as viewers are meant to sympathize with Joe but marvel at his oddities. The Incongruity Theory also plays a part, since his oddities are incongruous with the learning situation and the typical disposition of a well-rounded college student.

The humor's relation to the content appears more difficult to define; in Wanzer et al.'s definition, eight of the nine categories for appropriate humor overlapped with categories for inappropriate humor (Wanzer et al., 2006). In this study, care was taken to make the humor superfluous to the instructional content to avoid the confounding effect that has appeared in other studies (Kaplan & Pascoe, 1977; Kothari et al., 1993; Ziv, 1988), which appear to use instructional strategies like examples in conjunction with humor. The goal of this study is to determine if humor, isolated from other instructional variables, improves learning and motivation.

The script for the final video can be found in Appendix H, with the humorous dialogue italicized.

Data Analysis

Data was collected from two different courses and participants were divided randomly between males and females. The courses varied in content, length, and instructor. Learning assessment data was graded and scored. The Humor Manipulation Check and Instructional Materials Motivation Survey are quantitative instruments that produced number scores. Qualitative data from responses to the open-ended questions were coded. Each analysis will be described in more detail below.

Learning Assessment

As described earlier, beginning with Pilot 2, learning assessments consisted of 10 open-ended questions and 1 matching question for a total of 11 questions. Items were divided into three categories based on Bloom's taxonomy: knowledge (n=4), comprehension (n=4), and application (n=3) (Bloom, 1956). Comparisons will be made between individual totals for each category: knowledge, comprehension, application, and the collective total of all three categories.

Scoring

Two independent sources graded the test according to a rubric designed by the researcher. The rubric changed slightly from the pilot studies in that it was formalized and slight modifications were made after consulting with the graduate students in an effort to clarify the process and improve fairness.

The graduate students received a test bank of questions to practice with to determine if they appeared capable of grading the questions accurately. After successfully completing the test bank, they were given anonymous student responses put in random sequential order (in other words, responses from each of the three treatments were intermixed to avoid sequential bias). They were given the original instructional materials, a rubric, and a short explanatory video about how to grade the responses. After they scored the responses the graders discussed their scores (independent of the researcher) until they reached 90% agreement on each item (for example, the first knowledge questions). The grader's independent inter-rater reliability was used to minimize researcher influence on the data. The remaining 10% differential was calculated with an average between the two grader's scores.

A total of 55 points were possible overall, combining knowledge (27 points), comprehension (19 points) and application (nine points) questions. As mentioned earlier, the open-ended approach is modeled after Mayer's assessment of recall and application (Mayer & Anderson, 1991, 1992; Mayer, 1989, etc.). Each of the 10 open-ended questions could be worth two or more points. Students got a point for each part they included in their answer. For example, when asked "Please explain the difference between summarizing and paraphrasing," students received a point for each of the following for a total of three points:

> Summarizing is putting the main point in your own words. (1)
>
> Paraphrasing is putting all of the main points in your own words. (1)
>
> Summarizing is shorter. (1)

Each item had a different number of points, based on the content of the question.

Pretest, Posttest, and Second Posttest

Because the learning assessment items were the same between pretest, posttest, and second posttest, final assessment scores were determined by differences between the scores. Three scores were calculated. First, the difference between the pretest and the posttest (posttest minus pretest) measured the gain from three weeks before the instructional intervention to immediately after, which will be called the prepost. Second, the difference between the pretest and the second posttest (second posttest minus pretest) measured the gain (or loss) from the pretest to second posttest, six weeks later, which will be called the pre2post. Third, the difference between the second posttest and the first posttest (second posttest minus posttest) measured the loss (or gain) from the posttest to the second posttest three weeks later. This last score will be called the post2post.

The prepost, pre2post, and post2post scores were compared using a 2 (Humor vs No Humor) x 2 (Male vs Female) ANOVA. This strategy differs slightly from Mayer's approach of a one-way ANOVA (Mayer et al., 1996; Mayer & Sims, 1994; Mayer, 1989). The affective nature of the humor intervention suggests this approach may be more appropriate in examining the additional influence that gender may have on learning and motivation (Tamborini & Zillmann, 1981)

Table 3.8

Score Explanation by Survey Timing

Score Label	*Assessment Equation*	*Time Difference*	*Week Difference*
Prepost	Posttest minus pretest	3 weeks	Week 1 to 3
Pre2post	Second posttest minus pretest	6 weeks	Week 1 to 6
Post2post	Second posttest minus posttest	3 weeks	Week 3 to 6

The specific questions and acceptable answers for each item can be found in Appendix B.

Humor Manipulation Check (HMC)

For the HMC, each item will be weighted from -3 to 3. For example, selecting the option closest to “Not Funny” would result in a -3, and selecting the option closest to “Funny” would result in 3 (Cho, 1995; Flaherty, Weinberger, & Gulas, 2004). The first item is reversed in the scoring. Means within groups were compared with a 2 (Humor vs No Humor) x 2 (Male vs Female) ANOVA.

Motivation Survey

The IMMS scores each item from 1-5, with a total range of 36-180 points. Subscales have different individual ranges, and several items are reversed in scoring.

Table 3.9

IMMS Score Range and Items to Reverse for Each Factor

Scale	*Items*	*Range*	*Reversed Items*
Attention	12	12-60	12, 15, 22, 29, 31
Relevance	9	9-45	26
Confidence	9	9-45	3, 7, 19, 34
Satisfaction	6	6-30	None
Total	36	36-180	

Keller reports that there are no normal levels expected for the survey (Keller, 2010). Instead, the average of each of the subscales (Attention, Relevance, Confidence, Satisfaction) and the overall total will be compared using ANOVA tests as described earlier, an approach used in other studies (Hirumi & Bowers, 1991; Pittenger, 2010; Song & Keller, 2001). Of particular interest will be the Attention subscale because of the relationship between humor and maintaining attention.

Open-Ended Questions

The open-ended questions will be reviewed by the researcher and another independent observer and coded for categorization with at least a 75% agreement level.

Statistical Data

The data analysis was conducted using a 2 (Humor vs No Humor) x 2 (Male vs Female) ANOVA for each category of data – learning assessment, humor manipulation

check, and motivation survey. If differences at the p=.05 level or higher were found they were considered significant.

CHAPTER 4 RESULTS

Review of Research Purpose

The purpose of this research was to explore the effects of adding humor to an instructional video. Specifically, it focuses on the effects of humor on student learning and student perception of motivation. Research questions for this study are as follows: does adding humor affect learning or motivation?

R_1 – Does adding humor to an instructional video influence learning?

H_1 – Adding humor to an instructional video will improve learning.

R_2 – Does adding humor to an instructional video influence motivation?

H_2 – Adding humor to an instructional video will improve motivation.

R_3 – Does the gender of the student influence learning or motivation?

H_3 – The gender of the student will not influence learning or motivation.

This section gives the results of the final study, first focusing on the qualitative learning assessment items, then on the quantitative motivation and humor items.

Learning Assessment

This section will review the results from the learning assessments. Results are divided into three sections, the difference between the pretest and posttest, the difference between the pretest and the second posttest, and the difference between

the posttest and the second posttest. Gender was indicated to be an important factor in perception of humor in previous studies (Bryant et al., 1980; Tamborini & Zillmann, 1981), thus will be included, along with the experimental condition, as a factor in the comparisons of learning in a two-way ANOVA. Scores were compared for each component of learning assessment (knowledge, comprehension, application) and the total score of all three components.

From Pretest to Posttest

Pretest / Posttest Gain - Knowledge Items

Gain scores between the pretest and posttest on knowledge items showed no significant differences between the two conditions, $F(1,54) = 0.68$, $p = 0.41$; however, there were significant differences between genders, $F(1,54) = 7.09$, $p = 0.01$. Specifically, males scored higher than females on knowledge items in the pre-post score. Results also exhibited a non-significant interaction between the condition and gender, $F(1,54) = 0.22$, $p = 0.64$.

Table 4.1

2x2 ANOVA Pretest / Posttest Mean Gains on Knowledge

Condition	*n*	*M*	*SE*
Control	29	5.33	0.75
Experiment	26	6.25	0.83
Gender			
Male	16	7.28	0.94
Female	39	4.30	0.60

Table 4.2

2x2 ANOVA Pretest / Posttest Gains on Knowledge - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	104.71a	3	34.90	2.49	0.07
Intercept	1503.59	1	1503.59	107.25	0.00
Condition	9.54	1	9.54	0.68	0.41
Gender	99.46	1	99.46	7.09	0.01*
Condition * Gender	3.06	1	3.06	0.22	0.64
Error	715.02	51	14.02		
Total	2270.75	55			
Corrected Total	819.73	54			

Note: *Significant at the p<.05 level.

Pretest / Posttest Gain - Comprehension Items

Gain scores between the pretest and posttest on comprehension items showed no significant differences between the two conditions, $F(1,54) = 1.09$, $p = 0.30$, nor between genders $F(1,54) = 0.18$, $p = 0.67$. However, results exhibited a significant interaction between the condition and gender, $F(1,54) = 6.95$, $p = 0.01$. The plot of the interaction shows that males were more positively affected by the humor in the instructional video than females.

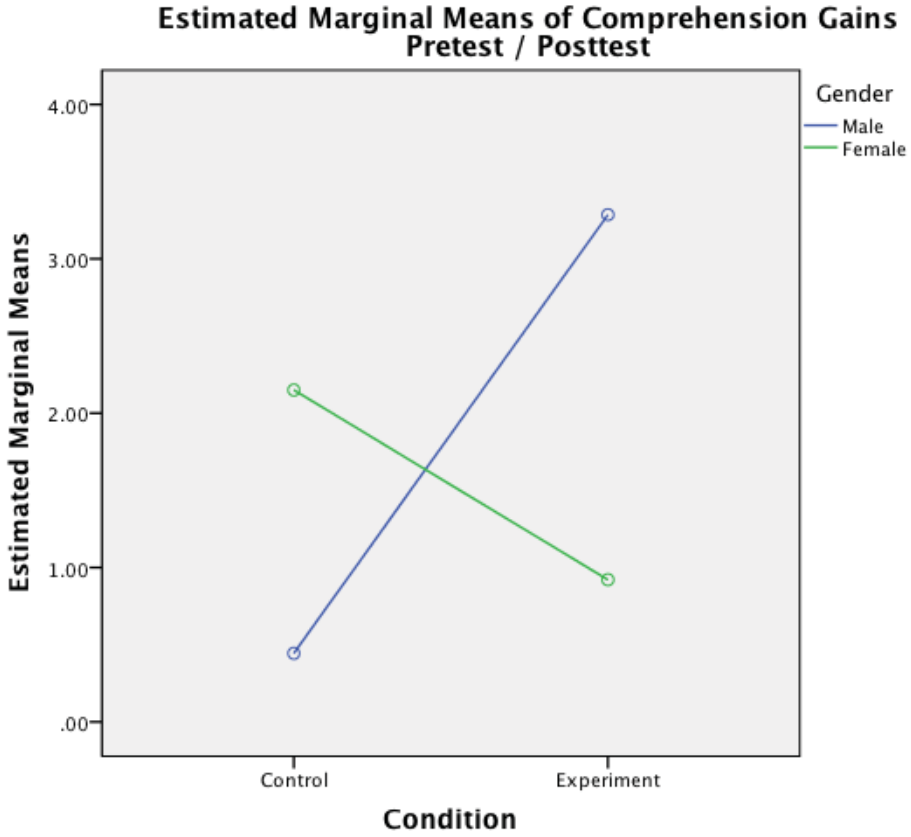

Figure 4.1 *Pretest / Posttest Gains on Comprehension Scores Condition * Gender*

Table 4.3

2x2 ANOVA Pretest / Posttest Mean Gains on Comprehension

Condition	*n*	*M*	*SE*
Control	29	1.30	0.52
Experiment	26	2.10	0.57
Gender			
Male	16	1.87	0.65
Female	39	1.54	0.41

Table 4.4

2x2 ANOVA Pretest / Posttest Gains on Comprehension - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	46.71a	3	15.57	2.33	0.09
Intercept	129.72	1	129.72	19.41	0.00
Condition	7.29	1	7.29	1.09	0.30
Gender	1.22	1	1.22	0.18	0.67
Condition * Gender	46.46	1	46.46	6.95	0.01
Error	340.83	51	6.683		
Total	526.75	55			
Corrected Total	387.55	54			

Pretest / Posttest Gain - Application Items

Gain scores between the pretest and posttest on application items showed no significant differences between the two conditions, $F(1,54) = 1.21$, $p = 0.28$, nor between genders $F(1,54) = 0.08$, $p = 0.78$. In addition there was not significant interaction between the condition and gender, $F(1,54) = 3.27$, $p = 0.08$.

Table 4.5

2x2 ANOVA Pretest / Posttest Mean Gains on Application

Condition	*n*	*M*	*SE*
Control	28	0.44	0.57
Experiment	25	1.36	0.62
Gender			
Male	16	0.78	0.70
Female	37	1.02	0.46

Table 4.6

2x2 ANOVA Pretest / Posttest Gains on Application - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	28.59a	3	9.53	1.22	0.31
Intercept	35.66	1	35.66	4.57	0.04
Condition	9.46	1	9.46	1.21	0.28
Gender	0.64	1	0.64	0.08	0.78
Condition * Gender	25.48	1	25.48	3.27	0.08
Error	382.44	49	7.80		
Total	454.50	53			
Corrected Total	411.03	52			

Pretest / Posttest Gain - All Items

Gain scores between the pretest and posttest on comprehension items showed no significant differences between the two conditions, $F(1,54) = 2.16$, $p = 0.15$, nor between genders $F(1,54) = 2.03$, $p = 0.16$. However, results exhibited a significant interaction between the condition and gender, $F(1,54) = 4.31$, $p = 0.04$. The plot of the interaction shows that males were more positively affected by the humor in the instructional video than females.

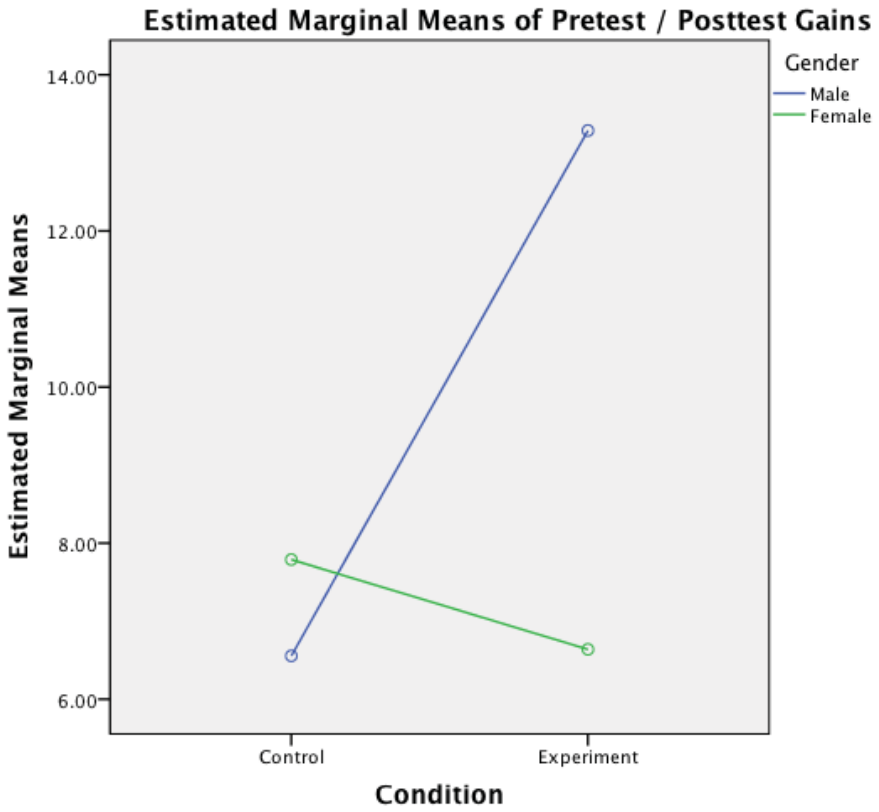

Figure 4.2 *Pretest / Posttest Gains on Overall Scores Condition * Gender*

Table 4.7

2x2 ANOVA Pretest / Posttest Mean Gains Overall

Condition	*n*	*M*	*SE*
Control	28	7.17	1.28
Experiment	25	9.96	1.41
Gender			
Male	16	9.92	1.59
Female	37	7.21	1.04

Table 4.8

2x2 ANOVA Pretest / Posttest Gains Overall - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	248.16a	3	82.72	2.08	0.12
Intercept	3242.83	1	3242.83	81.46	0.00
Condition	85.96	1	85.96	2.16	0.15
Gender	80.90	1	80.90	2.03	0.16
Condition * Gender	171.49	1	171.49	4.31	0.04*
Error	1950.71	49	39.81		
Total	5519.25	53			
Corrected Total	2198.87	52			

Note: *Significant at the p<.05 level.

Pretest / Posttest Gains Summary

Learning gains between the pretest and posttest were mixed. Males scored higher on knowledge items, but on comprehension, application, and overall items neither condition nor gender scored higher. On comprehension items, and on the overall scores, there was a significant interaction between condition and gender, and in both cases humor positively affected male scores more than female scores.

<u>From Pretest to Second Posttest</u>

The score difference between the pretest and the second posttest (pre2post) was compared between conditions. There were fewer overall responses on the second posttest (37 compared to 55 on the posttest). This was particularly the case in U106,

where in one section it was given after the semester was over (extra credit points in that case were assigned based on the first two surveys).

Pretest / Second Posttest – Knowledge Items

Gain scores between the pretest and second posttest on knowledge items showed that there were no significant differences between the two conditions, $F(1,36) = 0.31$, $p = 0.58$, genders, $F(1,36) = 0.43$, $p = 0.52$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,36) = 1.09$, $p = 0.30$.

Table 4.9

2x2 ANOVA Pretest / Second Posttest Mean Gains on Knowledge

Condition	*n*	*M*	*SE*
Control	17	2.77	1.02
Experiment	20	3.53	0.92
Gender			
Male	9	3.60	1.20
Female	28	2.70	0.68

Table 4.10

2x2 ANOVA Pretest / Second Posttest Gains on Knowledge - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	21.32a	3	7.11	0.56	0.65
Intercept	267.68	1	267.68	21.02	0.00
Condition	3.93	1	3.93	0.31	0.58
Gender	5.43	1	5.43	0.43	0.52
Condition * Gender	13.89	1	13.89	1.09	0.30
Error	420.26	33	12.74		
Total	759.75	37			
Corrected Total	441.58	36			

Pretest / Second Posttest – Comprehension Items

Gain scores between the pretest and second posttest on comprehension items showed that there were no significant differences between the two conditions, $F(1,38) = 0.00$, $p = 0.96$, genders, $F(1,38) = 0.33$, $p = 0.57$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,38) = 0.12$, $p = 0.73$.

Table 4.11

2x2 ANOVA Pretest / Second Posttest Mean Gains on Comprehension

Condition	*n*	*M*	*SE*
Control	18	0.81	0.71
Experiment	21	0.86	0.69
Gender			
Male	10	0.55	0.85
Female	29	1.12	0.50

Table 4.12

2x2 ANOVA Pretest / Second Posttest Gains on Comprehension - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	3.88a	3	1.29	0.18	0.91
Intercept	20.63	1	20.63	2.83	0.10
Condition	0.01	1	0.01	0.00	0.96
Gender	2.39	1	2.39	0.33	0.57
Condition * Gender	0.88	1	0.88	0.12	0.73
Error	255.36	35	7.30		
Total	297.25	39			
Corrected Total	259.24	38			

Pretest / Second Posttest – Application Items

Gain scores between the pretest and second posttest on application items showed that there were no significant differences between the two conditions, $F(1,34) = 3.91$, $p = 0.06$, or between the genders, $F(1,34) = 0.55$, $p = 0.46$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,34) = 0.71$, $p = 0.40$.

Table 4.13

2x2 ANOVA Pretest / Second Posttest Mean Gains on Application

Condition	*n*	*M*	*SE*
Control	16	-0.65	0.57
Experiment	19	0.86	0.51
Gender			
Male	9	-0.18	0.66
Female	26	0.39	0.39

Table 4.14

2x2 ANOVA Pretest / Second Posttest Gains on Application - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	16.62a	3	5.54	1.44	0.25
Intercept	.31	1	0.31	0.08	0.78
Condition	15.01	1	15.01	3.91	0.06
Gender	2.11	1	2.11	0.55	0.46
Condition * Gender	2.74	1	2.74	0.71	0.40
Error	118.98	31	3.84		
Total	138.75	35			
Corrected Total	135.60	34			

Pretest / Second Posttest – All Items

Gain scores between the pretest and second posttest on all items showed that there were no significant differences between the two conditions, $F(1,34) = 1.56$, $p = 0.22$, genders, $F(1,34) = 0.04$, $p = 0.84$. Results also exhibited a non-significant interaction between the condition and gender, $F(F(1,34) = 0.59$, $p = 0.45$.

Table 4.15

2x2 ANOVA Pretest / Second Posttest Mean Gains Overall

Condition	*n*	*M*	*SE*
Control	16	3.06	1.43
Experiment	19	5.46	1.29
Gender			
Male	9	4.06	1.66
Female	26	4.46	0.97

Table 4.16

2x2 ANOVA Pretest / Second Posttest Gains Overall - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	39.27a	3	13.09	0.54	0.66
Intercept	480.89	1	480.89	19.69	0.00
Condition	38.15	1	38.15	1.56	0.22
Gender	1.07	1	1.07	0.04	0.84
Condition * Gender	14.36	1	14.36	0.59	0.45
Error	757.12	31	24.42		
Total	1487.25	35			
Corrected Total	796.39	34			

Pretest / Second Posttest – Summary

Learning gains between the pretest and second posttest showed no significant differences between genders or conditions. Additionally there was no significant interaction between condition and gender.

From Posttest to Second Posttest

The difference between scores on the first posttest and the second posttest (second posttest minus posttest), or in other words, the loss (in almost every category by every group) of knowledge three weeks after the instructional intervention was examined (post2post) with two-way ANOVAs using condition and gender as factors, as in the previous learning gain comparisons.

Posttest / Second Posttest Gain – Knowledge Items

Gain scores between the posttest and second posttest on knowledge items showed that there were no significant differences between the two conditions, $F(1,36) = 0.73$, $p = 0.40$, genders, $F(1,36) = 3.38$, $p = 0.08$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,36) = 1.14$, $p = 0.29$.

Table 4.17

2x2 ANOVA Posttest / Second Posttest Mean on Knowledge

Condition	*n*	*M*	*SE*
Control	17	-3.55	0.87
Experiment	20	-2.55	0.79
Gender			
Male	9	-4.13	1.02
Female	28	-1.97	0.58

Table 4.18

2x2 ANOVA Posttest / Second Posttest Gains on Knowledge - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	39.43a	3	13.14	1.42	0.25
Intercept	250.59	1	250.59	27.11	0.00
Condition	6.71	1	6.71	0.73	0.40
Gender	31.21	1	31.21	3.38	0.08
Condition * Gender	10.56	1	10.56	1.14	0.29
Error	305.04	33	9.24		
Total	570.75	37			
Corrected Total	344.47	36			

Posttest / Second Posttest Gain – Comprehension Items

Gain scores between the posttest and second posttest on comprehension items showed that there were no significant differences between the two conditions, $F(1,36) = 0.10$, $p = 0.75$, genders, $F(1,36) = 0.89$, $p = 0.35$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,36) = 2.14$, $p = 0.15$.

Table 4.19

2x2 ANOVA Posttest / Second Posttest Mean on Comprehension

Condition	*n*	*M*	*SE*
Control	18	-1.09	0.81
Experiment	21	-1.45	0.78
Gender			
Male	10	-1.80	0.97
Female	29	-0.74	0.57

Table 4.20

2x2 ANOVA Posttest / Second Posttest Gains on Comprehension - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	31.41a	3	10.47	1.12	0.36
Intercept	47.81	1	47.81	5.10	0.03
Condition	0.93	1	0.93	0.10	0.75
Gender	8.34	1	8.34	0.89	0.35
Condition * Gender	20.08	1	20.08	2.14	0.15
Error	328.29	35	9.38		
Total	395.75	39			
Corrected Total	359.69	38			

Posttest / Second Posttest Gain – Application Items

Gain scores between the posttest and second posttest on application items showed that there were no significant differences between the two conditions, $F(1,36) = 0.63$, $p = 0.43$, genders, $F(1,36) = 2.96$, $p = 0.10$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,36) = 0.11$, $p = 0.74$.

Table 4.21

2x2 ANOVA Posttest / Second Posttest Mean on Application

Condition	*n*	*M*	*SE*
Control	15	-1.18	0.59
Experiment	19	-0.55	0.53
Gender			
Male	9	-1.55	0.68
Female	25	-0.18	0.41

Table 4.22

2x2 ANOVA Posttest / Second Posttest Gains on Application - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	14.50a	3	4.83	1.17	0.34
Intercept	19.59	1	19.59	4.75	0.04
Condition	2.61	1	2.61	0.63	0.43
Gender	12.23	1	12.23	2.96	0.10
Condition * Gender	0.47	1	0.47	0.11	0.74
Error	123.75	30	4.12		
Total	147.25	34			
Corrected Total	138.24	33			

Posttest / Second Posttest Gain – Overall

Gain scores between the posttest and second posttest overall showed that there were no significant differences between the two conditions, $F(1,36) = 0.26$, $p = 0.61$, genders, $F(1,36) = 3.07$, $p = 0.09$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,36) = 0.01$, $p = 0.94$.

Table 4.23

2x2 ANOVA Posttest / Second Posttest Mean Overall

Condition	*n*	*M*	*SE*
Control	15	-5.91	1.86
Experiment	19	-4.63	1.66
Gender			
Male	9	-7.45	2.14
Female	25	-3.09	1.28

Table 4.24

2x2 ANOVA Posttest / Second Posttest Gains Overall - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	143.31a	3	47.77	1.18	0.33
Intercept	725.37	1	725.37	17.90	0.00
Condition	10.71	1	10.71	0.26	0.61
Gender	124.31	1	124.31	3.07	0.09
Condition * Gender	0.21	1	0.21	0.01	0.94
Error	1215.55	30	40.518		
Total	1947.75	34			
Corrected Total	1358.86	33			

Posttest / Second Posttest Gain Summary

To summarize the gains from the first posttest to the second posttest: there were no significant differences between genders or conditions on knowledge, comprehension, or application individually, nor were there significant differences in the overall scores. Additionally there was no significant interaction between condition and gender on any individual pieces or the overall assessment.

Overall Learning Summary

Summarizing gains related to the second posttest (from either the pretest or the posttest) is straightforward – there were not significant differences in learning gains

between experimental conditions or gender, nor significant interactions between condition and gender.

Gains from the pretest to the posttest (a three week difference) were more nuanced. Males (from either condition) achieved significantly higher learning gains than females on knowledge items. Males scores were significantly more affected by humor than females on comprehension items and overall. These results will be examined in more detail in chapter 5.

Humor Manipulation Check (HMC)

The HMC was examined by comparing scores for each of the three items and the overall score between conditions and gender in a two-way ANOVA. A total of 55 participants took the HMC, 20 from U106 and 35 from COMM. The full survey can be viewed in Appendix E.

Reliability

To determine the reliability of the 3-item HMC in this study, Cronbach's Alpha was run. In the control group with 29 participants, it was .89, and in the experimental group it was .92. This is above .7, thus within satisfactory range for reliability (Kline, 2007).

Table 4.25

Cronbach's Alphas for the Humor Manipulation Check

Condition	*n*	*α*	*items*
Control	29	0.89	3
Experiment	26	0.92	3

Note: n represents the number of participants' data, while items represent the number of items on the assessment

Not Funny - Funny

Scores on the HMC scale for the Not Funny – Funny item showed no significant differences between the two conditions, $F(1,54) = 0.11$, $p = 0.74$, or between the genders, $F(1,54) = 0.07$, $p = 0.80$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,54) = 0.00$, $p = 0.95$.

Table 4.26

2x2 ANOVA HMC Score Mean - Funny

Condition	*n*	*M*	*SE*
Control	29	0.95	0.36
Experiment	26	0.77	0.39
Gender			
Male	16	0.93	0.45
Female	39	0.79	0.29

Table 4.27

2x2 ANOVA HMC Score Mean - Funny - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	.77a	3	.25	.08	.97
Intercept	33.21	1	33.21	10.41	.00
Condition	.36	1	.36	.11	.74
Gender	.21	1	.21	.07	.80
Condition * Gender	.01	1	.01	.00	.95
Error	162.76	51	3.19		
Total	202.00	55			
Corrected Total	163.53	54			

Not Humorous - Humorous

Scores on the HMC scale for the Not Humorous – Humorous item showed no significant differences between the two conditions, $F(1,54) = 0.20$, p= 0.66, or between the genders, $F(1,54) = 2.87$, p= 0.10, p= 0.80. Results also exhibited a non-significant interaction between the condition and gender, $F(1,54) = 3.02$, p= 0.09.

Table 4.28

2x2 ANOVA HMC Score Mean - Humorous

Condition	*n*	*M*	*SE*
Control	29	0.79	0.33
Experiment	26	1.01	0.37
Gender			
Male	16	1.32	0.42
Female	39	0.48	0.27

Table 4.29

2x2 ANOVA HMC Score Mean - Humorous - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	15.21a	3	5.07	1.84	0.15
Intercept	36.20	1	36.20	13.17	0.00
Condition	0.54	1	0.54	0.20	0.66
Gender	7.89	1	7.89	2.87	0.10
Condition * Gender	8.31	1	8.31	3.02	0.09
Error	140.14	51	2.75		
Total	183.00	55			
Corrected Total	155.35	54			

Not Amusing - Amusing

Scores on the HMC scale for the Not Amusing – Amusing item showed no significant differences between the two conditions, $F(1,54) = 0.13$, $p = 0.72$, or between the genders, $F(1,54) = 0.98$, $p = 0.33$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,54) = 0.24$, $p = 0.62$.

Table 4.30

2x2 ANOVA HMC Score Mean - Amusing

Condition	*n*	*M*	*SE*
Control	29	0.88	0.34
Experiment	26	1.06	0.37
Gender			
Male	16	1.21	0.42
Female	39	0.72	0.27

Table 4.31

2x2 ANOVA HMC Score Mean - Amusing - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	3.27[a]	3	1.09	0.39	0.76
Intercept	41.84	1	41.84	14.86	0.00
Condition	0.37	1	0.37	0.13	0.72
Gender	2.77	1	2.77	0.98	0.33
Condition * Gender	0.69	1	0.69	0.24	0.62
Error	143.57	51	2.82		
Total	187.00	55			
Corrected Total	146.84	54			

HMC Overall

Scores on the HMC scale overall showed no significant differences between the two conditions, $F(1,54) = 0.02$, $p = 0.88$, or between the genders, $F(1,54) = 1.09$, $p = 0.30$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,54) = 0.66$, $p = 0.42$.

Table 4.32

2x2 ANOVA HMC Score Mean – HMC Overall

Condition	*n*	*M*	*SE*
Control	29	2.61	0.95
Experiment	26	2.83	1.05
Gender			
Male	16	3.46	1.19
Female	39	1.99	0.76

Table 4.33

2x2 ANOVA HMC Score Mean – HMC Overall - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	37.10[a]	3	12.37	0.55	0.65
Intercept	332.99	1	332.99	14.87	0.00
Condition	0.55	1	0.55	0.02	0.88
Gender	24.31	1	24.31	1.09	0.30
Condition * Gender	14.69	1	14.69	0.66	0.42
Error	1142.10	51	22.39		
Total	1496.00	55			
Corrected Total	1179.20	54			

HMC Summary

Results from the two-way ANOVAs for each item in the HMC and for the overall HMC score showed no significant differences between conditions or gender. Results also indicated no significant interactions between the condition and gender factors.

Motivation Survey

The Instructional Materials Motivation Survey (IMMS) developed by Keller (2010) was given online after the instructional intervention. It came after the video and learning questions. A total of 55 participants took the IMMS, 20 from U106 and 35 from COMM. The full survey can be viewed in Appendix D.

IMMS Reliability

Cronbach's Alpha was performed on the IMMS as a whole, comparing across conditions.

For the control group (N=29), the overall IMMS score on the 36 questions was .92. Alpha for the twelve attention items was .92, for the nine relevance items .73, for the nine confidence items .84, and for the six satisfaction items .78. For the control group (N=26), the overall IMMS score on 36 questions was .94. Alpha for the twelve attention items was .91, for the nine relevance items .81, for the nine confidence items .74, and for the six satisfaction items .84. With scores ranging from .73 individually to .94 overall, the scale can be considered reasonably reliable according to Kline (2007).

Table 4.34

Cronbach's Alphas for IMMS Survey Between Conditions in Final Study

Category	Condition	*n*	*α*	*items*
Attention	Control	29	0.86	12
	Experiment	26	0.91	12
Relevance	Control	29	0.75	9
	Experiment	26	0.81	9
Confidence	Control	29	0.84	9
	Experiment	26	0.74	9
Satisfaction	Control	29	0.78	6
	Experiment	26	0.84	6
Overall	Control	29	0.92	36
	Experiment	26	0.94	36

Note: n represents the number of participants' data; items represents the number of items on the assessment

IMMS Scores

Categories within the IMMS, and the IMMS overall score were compared with a two-way ANOVA using experimental condition and gender as factors.

Attention

Scores on the attention items from the IMMS showed no significant differences between the two conditions, $F(1,53) = 0.02$, $p = 0.88$, or between the genders, $F(1,53) = 1.00$, $p = 0.32$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,53) = 2.00$, $p = 0.16$.

Table 4.35

2x2 ANOVA IMMS Score Mean – Attention

Condition	*n*	*M*	*SE*
Control	28	43.47	1.89
Experiment	26	43.91	2.06
Gender			
Male	16	45.09	2.35
Female	38	42.29	1.51

Table 4.36

2x2 ANOVA IMMS Score Mean – Attention - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	265.9[a]	3	88.64	1.02	0.39
Intercept	85011.51	1	85011.51	975.35	0.00
Condition	2.11	1	2.11	0.02	0.88
Gender	87.16	1	87.16	1.00	0.32
Condition * Gender	174.75	1	174.75	2.00	0.16
Error	4358.00	50	87.16		
Total	104642.00	54			
Corrected Total	4623.93	53			

Relevance

Scores on the relevance items from the IMMS showed no significant differences between the two conditions, $F(1,53) = 0.11$, $p = 0.74$, or between the genders, $F(1,53) = 0.25$, $p = 0.62$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,53) = 2.92$, $p = 0.09$.

Table 4.37

2x2 ANOVA IMMS Score Mean – Relevance

Condition	*n*	*M*	*SE*
Control	28	32.94	1.18
Experiment	26	32.35	1.29
Gender			
Male	16	33.09	1.47
Female	38	32.21	0.95

Table 4.38

2x2 ANOVA IMMS Score Mean – Relevance - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	150.26[a]	3	50.08	1.47	0.23
Intercept	47476.99	1	47476.99	1395.60	0.00
Condition	3.89	1	3.89	0.11	0.74
Gender	8.56	1	8.56	0.25	0.62
Condition * Gender	99.41	1	99.41	2.92	0.09
Error	1700.95	50	34.02		
Total	58629.00	54			
Corrected Total	1851.20	53			

Confidence

Scores on the confidence items from the IMMS showed no significant differences between the two conditions, $F(1,53) = 0.59$, $p = 0.45$, or between the genders, $F(1,53) = 0.01$, $p = 0.94$. However, results exhibited a significant interaction between the condition and gender, $F(1,53) = 3.91$, $p = 0.05$. A plot of the means indicated that the humor condition positively influenced males more than it influenced females in perception of confidence of the instruction.

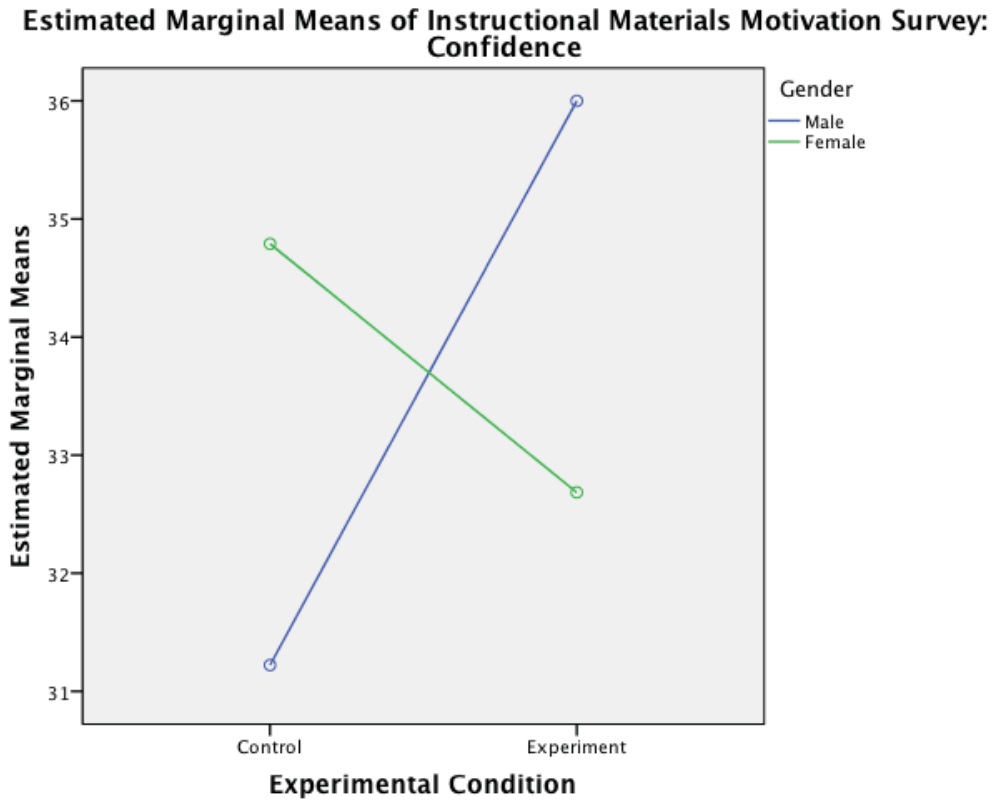

Figure 4.3, *IMMS Scores – Confidence for Condition * Gender Interaction*

Table 4.39

2x2 ANOVA IMMS Score Mean – Confidence

Condition	*n*	*M*	*SE*
Control	28	33.01	1.17
Experiment	26	34.34	1.28
Gender			
Male	16	33.61	1.46
Female	38	33.74	0.94

Table 4.40

2x2 ANOVA IMMS Score Mean – Confidence - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	134.02[a]	3	44.67	1.33	0.28
Intercept	50505.01	1	50505.01	1498.83	0.00
Condition	19.88	1	19.88	0.59	0.45
Gender	0.18	1	0.18	0.01	0.94
Condition * Gender	131.88	1	131.88	3.91	0.05*
Error	1684.82	50	33.70		
Total	62823.00	54			
Corrected Total	1818.83	53			

Note: *Significant at the p=.05 level.

Satisfaction

Scores on the satisfaction items from the IMMS showed no significant differences between the two conditions, $F(1,53) = 0.16$, $p = 0.69$. However, males scored significantly higher than females, $F(1,53) = 4.10$, $p = 0.05$. Results exhibited a non-significant interaction between the condition and gender, $F(1,53) = 1.23$, $p = 0.27$.

Table 4.41

2x2 ANOVA IMMS Score Mean – Satisfaction

Condition	*n*	*M*	*SE*
Control	28	19.10	1.00
Experiment	26	19.68	1.09
Gender			
Male	16	20.89	1.24
Female	38	17.89	0.80

Table 4.42

2x2 ANOVA IMMS Score Mean – Satisfaction - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	121.76[a]	3	40.59	1.67	0.19
Intercept	16748.75	1	16748.75	688.34	0.00
Condition	3.81	1	3.81	0.16	0.69
Gender	99.82	1	99.82	4.10	0.05*
Condition * Gender	29.85	1	29.85	1.23	0.27
Error	1216.61	50	24.33		
Total	20304.00	54			
Corrected Total	1338.37	53			

Note: *Significant at the p=.05 level.

IMMS Overall

Scores on the HMC scale overall showed no significant differences between the two conditions, $F(1,53) = 0.12$, $p = 0.73$, or between the genders, $F(1,53) = 1.07$, $p = 0.31$. Results also exhibited a non-significant interaction between the condition and gender, $F(1,53) = 3.62$, $p = 0.06$.

Table 4.43

2x2 ANOVA IMMS Score Mean – Overall

Condition	*n*	*M*	*SE*
Control	28	130.95	4.26
Experiment	26	133.16	4.65
Gender			
Male	16	135.33	5.30
Female	38	128.79	3.41

Table 4.44

2x2 ANOVA IMMS Score Mean – Overall - Interaction

Source	Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	2064.26[a]	3	688.09	1.55	0.21
Intercept	776732.35	1	776732.35	1753.57	0.00
Condition	54.31	1	54.31	0.12	0.73
Gender	475.66	1	475.66	1.07	0.31
Condition * Gender	1602.87	1	1602.87	3.62	0.06
Error	22147.16	50	442.94		
Total	943323.00	54			
Corrected Total	24211.43	53			

IMMS Results Summary

Results from the IMMS showed two significant results, but not on the attention items where predicted. On confidence items, humor influenced males significantly more than females in a positive way. Males perceived the instructional videos to be more satisfying than females.

Open-Ended Items

The control group (n=26) was asked one open-ended question (in addition to the learning assessments, which were also open-ended). The question asked how the video could have been improved. The experimental group (n=24) was asked the same

question with two additional questions, one asking their thoughts on the humor in the video and one asking their thoughts about humor in instructional videos generally.

Results from these questions were coded in conjunction with a colleague from the library. They were categorized and coded very simply with 100% agreement. Only including two representative comments in each category will be used to preserve the flow of the study results. All comments can be viewed in Appendix G.

Control Group

In the control group, one response was negative (female), fifteen were neutral (male=5, female=10), and ten (male=2, female=8) were positive. The one negative response, from a female, was that “the subject itself was boring… maybe have real people or something that is more eye grabbing.”

Neutral responses either expressed no strong opinion. From a female: “I cannot think of any [changes],” or balanced a negative comment with a positive one from a male, “Its [sic] just a dry topic but the voice over makes it decent.” Four of the comments focused on the need for more, or better examples, like this one from a female, “More examples to keep the audience engaged,” and this from a male, “More varied information and more complicated examples.” These comments are interesting given that the interesting examples were removed due to concern that they would confound the effects of humor. As common as the request for more examples was a request for more color in the video, which was done in black and white. From a male, “More colors,” and from a female, “Maybe a bit more color?" A few comments were

positive, for example, these two commends from females, "I thought it was pretty educational. I liked it," and "This video is far better than others that are similar."

Table 4.45

Control Group Open-Ended Questions by Gender and Response

Response	*Male*	*Female*	*Total*
Negative	0	1	1
Neutral	5	10	15
Positive	2	8	10

Experimental Group

Comments from the experimental group (n=24) were more divisive and balanced between positive and negative.

Experimental – Changes To Be Made

The first question, which asked about changes to be made, received ten negative responses (male=3, female=7). From a male, “I wouldn't have used the cartoon animations,” and from a female, “It was very cheesy and the jokes were kind of irrelevant to the video.” Without prompting, four comments (all four from females) focused on the humor, for example, "Juvenile and obnoxious," and "Not so childish." The eight neutral responses (male=3, female=5), as with the control group, either gave little opinion or gave both a positive and negative view. For example, a female wrote: "I don't think I would make any changes.” Another female stated:

> I thought sometimes it got to be a little too random and off topic. I think if I really needed to and wanted to learn about citing sources then I would just want the informational and skip the funny. However, I really enjoyed the humor.

Six comments were positive (male=1, female=5). From two females, "I would not have been able to do this better. Loved it!," and "It's cut e [sic] and to the point." There were three comments about adding more color.

Table 4.46

Experimental Group Open-Ended Question – Changes to be Made - by Gender and Response

Response	*Male*	*Female*	*Total*
Negative	3	7	10
Neutral	3	5	8
Positive	1	5	6

Experimental - Humor in the Video

On the question about the humor in the video, there were five negative comments, all from females: "I'm not a fan of shark-nato [sic] so I didn't get the references and fast-forwarded through those parts," and "It was not very funny to me. I was more of laughing at it then with it." There were seven neutral comments (male=3, female=4), such as this one from a female, "I like the originality but it just wasn't my

kind of humor but that doesn't mean it couldn't be someone else's." Another female wrote, "It was almost annoying, but I chuckled, so I would not say I would complain." Finally, there were twelve positive comments (male=4, female=8). A female wrote, "I thought the humor was a great addition to the video. It made me a little more interested in learning what it was about. If there was no humor I would probably not have paid attention to the video." Another female wrote, "Great. Loved the voices."

Table 4.47

Experimental Group Open-Ended Question – Humor in This Video - by Gender and Response

Response	*Male*	*Female*	*Total*
Negative	0	5	5
Neutral	3	4	7
Positive	4	8	12

Experimental – Humor in Other Instructional Videos

In the third question, about humor in other instructional videos (n=23), four comments were negative (male=1, female=3). A female wrote, "Usually not funny - I'd rather a shorter, more direct video. Reminded me of that one person in class who never stops interrupting," and from another female, "They were pretty annoying." Seven comments were neutral (male=3, female=4), for example from a male:

> I have seen some others that were funny with the way they used real people in the videos. Others seem to be dry because they are held by ethics of the university and are not able to branch out to get people involved.

A female wrote, "If it's relevant to what I am learning about I like it, but if it isn't, it is kind of pointless." Finally, twelve comments were positive (male=3, female=9). A female wrote, “I think its [sic] a great addition. For example, Bill Nye the Science Guy was a great man," and another female wrote, "I always think it helps me learn, relate, and retain information better."

Table 4.48

Experimental Group Open-Ended Question – Humor in Instructional Videos in General - by Gender and Response

Response	*Male*	*Female*	*Total*
Negative	1	3	4
Neutral	3	4	7
Positive	3	9	12

Summary

Non-Humor Video

Overall comments suggesting changes to the non-humor video were largely neutral. There were several positive comments spread evenly between genders and one negative comment from a female.

Humor Video

Comments suggesting changes to the humor video were more divisive, with slightly more negative comments (42%), followed by neutral (33%), then positive (25%). Negative comments were fairly even between genders. In proportion to their overall comments, females (29%) shared more positive comments than males (14%).

On the next question on the humor specific to this study's experimental video, there were more positive comments overall (50%), followed by comments that were neutral (29%) and negative (21%). Interestingly, the negative comments were from only females.

On the final question about humor in instructional videos in general, more comments were positive (52%), followed by neutral (30%) and then negative (17%). In proportion to their total number, females (56%) were slightly more positive than males (43%).

Thus it appears that the humor in the experimental video drew out a strong response. Comments about the non-humor video were balanced between males and females. Comments about the humor in the experimental video were more negative

among females, though females did give positive comments about humor in instructional videos in general. Thus it appears that there may have been a disconnect between the humor they usually enjoy in instructional videos and the humor in the experimental video in this study.

Correlations

Correlations were run to determine if there were relationships between the prepost, pre2post, HMC, and IMMS. These correlations were run within each condition, overall, within gender, and within courses.

Overall

Overall there were no significant correlations between factors within the non-humor control group. However, within the humor experimental group, significant correlations were found between prepost and HMC scores [$r = .66$, $n = 25$, $p = .00$], prepost and the IMMS [$r = .43$, $n = 25$, $p = .03$], and the HMC and IMMS [$r = .79$, $n = 26$, $p = .00$]. In addition, a significant positive correlation was found in the humor group between the prepost and pre2post scores [$r = .48$, $n = 19$, $p = .04$]. In other words, there was a positive relationship between high scores on the prepost and students' perceptions of humor and motivation of the video, and a very strong positive relationship between perception of humor in the video and perception of motivation in the video. Finally, there was a positive relationship between scores on the prepost and pre2post scores.

Table 4.49

Correlational Results for All Participants

	Control			
	Prepost	Pre2post	HMC	IMMS
Prepost	--	.330	.298	.029
Pre2post		--	.392	-.043
HMC			--	.041
IMMS				--
	Experimental			
	Prepost	Pre2post	HMC	IMMS
Prepost	--	.48*	.66**	.43*
Pre2post		--	0.24	0.14
HMC			--	.79**
IMMS				--

Note: *p<.05, **p<.01

Genders

Correlations were also done within gender groups. Among males, in the non-humor group there were no significant correlations. In the humor group, there were significant correlations between scores on the prepost and the HMC [r = .94, n = 7, p = .00], prepost and IMMS [r = .86, n = 7, p = .01], and HMC and IMMS [r = .76, n = 7, p = .05]. Thus, there was a very strong positive relationship for males in the humor group between their prepost scores and perception of the video as funny, their prepost scores and perception of the video as motivating, and their perception of the video as funny and perception of the video as motivating.

Table 4.50

Correlational Results for Male Participants

	Control			
	Prepost	Pre2post	HMC	IMMS
Prepost	--	-0.49	0.61	-0.15
Pre2post		--	0.51	0.25
HMC			--	0.29
IMMS				--
	Experimental			
	Prepost	Pre2post	HMC	IMMS
Prepost	--	0.31	.94**	.86*
Pre2post		--	0.08	0.61
HMC			--	.76*
IMMS				--

Note: *p<.05, **p<.01

Among females, in the non-humor group there were no significant correlations. In the humor group, there were significant correlations between scores on the prepost and the HMC [r = .50, n = 18, p = .04] and HMC and IMMS [r = .80, n = 19, p = .00]. In addition there was a significant correlation between prepost and pre2post scores [r = .58, n = 14, p = .03]. Thus, there was a very strong positive relationship for females in the humor group between their prepost scores and perception of the video as funny, and their perception of the video as funny and perception of the video as motivating. Finally, there was a strong positive relationship between how well females performed on the first posttest and how they performed on the second posttest.

Table 4.51

Correlational Results for Female Participants

	Control			
	Prepost	Pre2post	HMC	IMMS
Prepost	--	0.58	0.19	0.07
Pre2post		--	0.45	-0.18
HMC			--	-0.01
IMMS				--
	Experimental			
	Prepost	Pre2post	HMC	IMMS
Prepost	--	.58*	.50*	0.28
Pre2post		--	0.29	0.01
HMC			--	.80**
IMMS				--

Note: *p<.05, **p<.01

Summary

Correlations, in summary, provided interesting connections between factors that were not made clear in the ANOVA comparisons. There was a strong, significant, positive correlation overall and within each sub-category between the IMMS and the HMC in the experimental group. In other words, students who scored the funny video higher on funniness also scored it higher for motivation, and vice versa. For males there were very strong, significant relationships between prepost scores and IMMS scores, and prepost scores and HMC scores. For females there was a strong, significant relationship between the prepost score and HMC. However, they did not appear to have a significant relationship between prepost scores and motivation.

The pre2post scores had strong, positive, significant correlations with prepost scores overall and among females, but only the humor group. In other words, overall

and among females, scores on the second posttest could be predicted by scores on the first posttest.

Summary of Results

The purpose of this study was to determine the effects of adding humor to an instructional video on learning and motivation.

The first research question for this study was:

R_1 – Does adding humor to an instructional video influence learning?

H_1 – Adding humor to an instructional video will improve learning.

Results indicated that overall, students who watched the humorous instructional video did not score higher at the $p<.05$ significance level on the learning assessments. Thus there is not enough evidence to support the hypothesis that adding humor improved learning. However, results indicate the humor had a stronger affect on learning for males than on females, overall and on comprehension items.

The second research question was:

R_2 – Does adding humor to an instructional video influence motivation?

H_2 – Adding humor to an instructional video will improve motivation.

Results indicate no significant difference between those who watched the humorous video and those who watched the non-humorous video in terms of scores on motivation assessments. Thus there is not enough evidence to support the hypothesis that humor improves motivation. One wrinkle in the analysis is that humor influenced males significantly in a positive way in terms of confidence.

The third research question was:

R_3 – Does the gender of the student influence learning or motivation?

H_3 – The gender of the student will not influence learning or motivation.

Results indicate that gender did influence learning – males overall (from either condition) scored significantly higher than females on gains from the pretest to the posttest. In addition, male scores were significantly more affected by the humor in this instructional video than females on comprehension items and overall.

For motivation, humor influenced males significantly more than females in a positive way. Also, males perceived the instructional videos to be more satisfying than females. Thus the hypothesis that gender would not influence learning or motivation is not supported.

CHAPTER 5 DISCUSSION

Learning Assessment and Perception of Humor

Learning assessments indicated that on the whole, neither condition learned significantly more from the pretest to the posttest or second posttest. However, gender was added as a factor because of its effects on perception in instruction from previous studies (Gorham & Christophel, 1990; Tamborini & Zillmann, 1981). In this study, males had higher learning gains on knowledge items, and were more strongly influenced on comprehension items and on the overall score by the humor in the experimental condition. This may indicate that their positive experience of humor in the video improved their learning of video content. Additionally, the data from the open-ended questions indicate that while females appreciated the humor in the video, those that did not may have had a negative experience. These results indicate gender can be an additional dimension to the use of humor in instruction. The same humor may work better with one gender or the other, or neither, and should be taken into account when designing humor.

A few factors may have skewed the humor in this study to favor males. First, the humor was developed by a male (the researcher), and was gauged by him to be funny.

Without testing the humor in a larger mixed-gender population perception of humor may have worked for those with homogenous views to the researcher.

Second, both characters in the video were male. In particular, the student character in the video, with whom the viewers were to relate, was male, which may

have alienated female students, who felt they could not identify with him. His relatability may also have been hurt by being the focus of the humor with his bizarre antics, giving female students two layers to push through to relate to him.

Third, males may appreciate humor in instruction more in general. Gorham and Christophel (1990) reported in a study of male and female student perception of humor, "male students were more affected by teachers' use of humor than were female students" (p. 55); their work also indicated that perception of learning, attitude towards the course, and intent to enroll in another course with the instructor were significantly positively correlated with the amount of humor in a lecture, where the same factors for females were significantly correlated.

In terms of the humor itself, it may be most closely compared with self-disparaging jokes, since Joe, the learner in the video, was designed to be odd, out of touch, and obsessive. Tamborini and Zillman (1981) reported that male students found self-disparaging male instructors more appealing than female students did. They suggest that in a largely female class, a male instructor would "probably benefit from the use of sexual humor, whereas a female professor would do better to use self-disparaging humor" (Tamborini & Zillmann, 1981, p. 432).

However, an additional wrinkle here is that the video was not a direct communication to the student, and the jokes or disparaging remarks were not made about the instructor, they were made about the student. In essence, the humorous video was a sketch with the instructor as the "straight man" and the student as the "comedy". This approach may be a departure from what students are used to viewing in

instructional videos, which tend to be approximations of lectures. It might be best compared to humorous, educational sketches, like those seen on Sesame Street, which may not be a format college students interpret as age-appropriate. This may account for comments in the open-ended surveys like “juvenile”. Both the humor and non-humor videos were cartoon animations. The humorous video relied partly on visual humor and partly on verbal humor. One study that tested humorous cartoons found that males tend to enjoy more visual humor (Mundorff, Bhatia, Zillman, Lester, & Robertson, 2009).

With these limitations in mind, however, it appears that the humor worked for some of the students. The high, significant correlation between perception of humor and gains between the pretest and posttest indicate that along with gender, perception of humor may have been hidden in the general results. In this way perception of humor may be seen as a third dimension or factor. Overall and within each gender perception of humor in the experimental group was positively, significantly correlated with the gain from pretest to posttest, though the correlation was much higher for males (.94). In other words, to the degree that they thought the experimental video was funny, they scored more highly on the test. The relationship between those variables could bear more scrutiny in future studies.

Motivation

Scores on the IMMS were not significantly higher for either the humor or non-humor group. However, the second dimension, gender, came into play. Males found the humorous video to be more satisfying, and males were more influenced than females by the humorous video to feel confident in the instruction. Missing from these significant

results is attention, which was perceived to be the category most related to humor by Keller (Keller, 2010). This is also confusing in light of responses to the open-ended questions. Four students in the experimental group mentioned attention specifically. One student indicated, “If there was no humor I would probably not have paid attention to the video.” Another wrote, “It was just enough to keep my attention but not so corny and overboard that I stopped paying attention.” While the humor helped maintain attention for the students who commented, it did not do so overall.

Looking more carefully at Keller’s approach to the satisfaction scale may be helpful in explaining why males perceived it to be significantly higher. Much of his focus is on a sense of accomplishment after finishing a task, but it also includes whether or not the instructional experience was pleasant (Keller, 2010). Of the six questions on the satisfaction scale on the IMMS, three deal with the sense of accomplishment, and three deal with a pleasant experience. The three for the pleasant experience are: 14) “I enjoyed this video so much that I would like to know more about this topic”, 21) “I really enjoyed watching this video”, and 36) “It was a pleasure to watch such a well-designed video” (Keller, 2010, pp. 283–284). It may be that males had a more pleasant experience and thus rated the satisfaction items higher.

For the influence of males on confidence items, it may be that the humor helped reduce tension in learning the content and thus increase their confidence – Keller describes one of the roles of building confidence as reducing anxiety (Keller, 2010), which aligns with research indicating that humor can have that effect (Askildson, 2005).

Finally, it should be noted that the data show a significant correlation between perception of humor and perception of motivation for all students in the experimental condition ($r = .79$, $p < .01$). This speaks to the concept of the third dimension, perception of humor, which may sometimes be independent of gender. For students of either gender who found it funny, there was a strong likelihood that they also found it motivating, with the opposite being true as well.

Humor Manipulation Check and Instructional Video

A key indicator of the validity of the instructional instrument, the video with the humor, is its perception as a humorous intervention. Various studies have tested the humor in their instruction to ensure that students perceived it to be humorous (for example, Ghaffari & Mohamadi, 2012; Kaplan & Pascoe, 1977). In this study the humorous video was not found funnier than the non-humorous video. This is a key issue talked about briefly in Chapter 2 in terms of the subjectivity of humor (Garner, 2006). It has also been discussed in this chapter in terms of a third, hidden dimension in a study like this.

A key part of any comedian's life is trying out new material. In a TV special, popular comedians Louis CK, Chris Rock, Jerry Seinfeld, and Ricky Gervais discuss trying new ideas or bits and modifying them if they don't work (Moffitt, 2011). If these successful entertainers are careful about crafting jokes that are widely accessible and appreciated, humor in the classroom would be best served by following this same practice. A limitation of this study was that there were not enough iterations of the

humorous content with a large enough population to determine that the humor was valid.

One factor that may have influenced the perception of humor was the format. Both videos were animated conversations between friendly cartoon-looking characters. This varies from traditional educational experiences and even traditional online video educational experiences. It could be that the animated cartoon format raised the perceived humor level of both conditions. Positive comments about how to improve the non-humor video alluded to its unintended entertainment value: “I actually liked it. I think it was useful and entertaining”; “The content of the video itself was interesting and creatively done.” In addition, comments in the experimental group alluded to the animated medium as somewhat adolescent: “I wouldn't have used the cartoon animations,” and “Not so childish.”

In addition, the humor itself seemed to be only partially effective. One student commented about changes to be made to the video, “I thought sometimes it got to be a little too random and off topic…I would just want the informational and skip the funny.” This may have been a result of the deliberate decision to use non-content related humor because it would jeopardize the study design. Some specifically noted that they recognized the humor but did not enjoy it: “I like the originality but it just wasn't my kind of humor.” While there were also positive comments about the humor, reporting that the humor was a valuable addition, the loss of a few students’ attention through distraction or annoyance is worth keeping in mind in instructional development.

Format may have made a difference in another way. A study described earlier found that humor in textbooks was perceived poorly by students (Klein et al., 1982). Instructional videos appear to fall somewhere between books and live lecture; like a textbook, sections of video instruction can be skipped or reviewed. Perhaps lessons learned from textbooks about avoiding humor and focusing only on content apply to instructional videos as well.

However, there was some utility in this tool to correlate perception of humor with learning. Although males in the humor condition did not rate their video significantly higher on the HMC, those who scored higher on learning items in the posttest did rate it more highly. This silver lining indicates that while the humor used was not to all tastes, for those that did find it humorous there was a corresponding level of motivation.

Limitations

This section will explore the limitations of the current study in terms of research design, instruments, and participants.

Research Design and Instruments

The current research design, a pretest / posttest / second posttest approach, was useful in determining change over time. However, a large number of students were lost between the pretest and the posttest: 43 students from COMM 302 and 51 students from U106, for a total of 94 students, finished the initial survey. If the study had been designed for a single session, it's likely that the final number of participants would have increased dramatically from the final 55 that took all three, giving results

more statistical strength. This may be the reason for Mayer's single-session research approach.

Giving the survey to students online, without monitoring their experience or knowing how they came to the answers they did, was another limitation of the current study. While it appears that almost all students wrote answers in their own words, it is conceivable that they shared answers with each other or looked them up online. However, part of the rationale for this approach is the increase in online learning and the increasing lack of face-to-face interactions, and in these online environments there are limitations on what can be controlled by the instructor.

As mentioned earlier, the failure of the humorous instructional video to be perceived as significantly more humorous by the participants is a major limitation. Were the study to be repeated, two changes related to the humor in the instructional instrument would be made. First, the instructional style of the video would conform to traditional approaches, such as a narrator with a PowerPoint, in order to ensure a more level starting ground. Second, the video would be tested and revised until a comparison with its non-humorous counterpart was clearly established.

Another limitation of the humor—its lack of relation to the study—was understood before starting the study. However, it was difficult to construct a design in which humor related to the topic did not give an educational advantage to the experimental group. Traditionally, the use of humor in instruction is used within the context of the content and used to illustrate the topic in a novel way. In this case that was not possible without violating the integrity of the study, although it appears to have

been successfully done in one study (Ghaffari & Mohamadi, 2012). Thus the results cannot be fully generalized to the way humor is often used in online instruction or in class, since it may often be used in the service of contextual examples or content-related material.

While not a limitation, a change for future studies would be the instructional content. The ideas of summarizing, quoting, and paraphrasing appeared to already be familiar to students, though the exact definitions and approaches taken by the video did not appear to be similarly familiar. Specific—perhaps scientific—content may have been more effective in demonstrating learning over time.

Another area of improvement may have been in scoring. Moreno and Mayer used a grader unaware of the treatments (Mayer & Moreno, 1998; Moreno & Mayer, 2004). This may have improved the objectivity of the current study, though grading the content would have been difficult because of the varying definitions of paraphrasing and summarizing.

Participants

The current study is a mixed-methods approach to determine the effect of humor in instructional videos on learning and motivation. Limitations that prevent this study from being widely generalizable include sample size and the convenience of sample selection. In addition, humor's contextual nature makes it difficult to replicate in other content.

The small number of students in each section of U106 led to combining students from four different instructors into one group, which may have altered the results since

each had their own curricula that may have covered the instructional content from this study.

Care should be taken in generalizing results, particularly since the group with the strongest significance, males, made up a minority of the total population (n=16).

Implications

Taken at face value, this study appears to indicate that one approach to humor in an instructional video influences learning among a subset of the participants. In this case, sketch-like humor delivered in a cartoon format developed by a male with male characters influenced learning positively for males in two courses. The correlation between learning scores, perception of humor, and perception of motivation for males indicates a pattern of receiving the humor well. This agrees with previous research indicating that reception of instructional humor varies between genders. However, feedback from students of both genders indicated both positive and negative experiences with the humor, stating that it either added to their experience and caught their attention, or distracted them from the educational content.

This leads to another implication of the study: while there appear to be positive influences of humor described in the literature in face-to-face classrooms, online humor may be more difficult because of its ability to alienate an audience with self-control over time spent on these materials and the ability to skip portions of the content. Pilot research for this project indicated the potential positive impact of interesting examples, which aligns with a study by Gruner (1970).

Specific implications when using humor in the classroom may include the need to test it out with different audiences to ensure that it works, using humor that is broad and can reach the largest number of students, and using humor that stays within traditional instructional roles that most students can relate to. In addition, representation of students in humor or video instruction should be thought about carefully since it may alienate students who don't feel connected to the character.

Further Research

Further research in this area could focus specifically on the effects of the gender of the instructor in the humorous content. A study including both male and female instructors in an online instructional video with both male and female students might help illuminate effective approaches for both genders, or eliminate the possibility of ever reaching all students with humor.

Another aspect of the instructional video is the animation and sketch-like format. Comparisons along gender lines could be examined on the effect of an animated and real-life version of the same instruction to determine if the presentation of the media changes the perception of the content. Because animation is often felt to be an adolescent medium, learners may reject the authority of cartoon content. In addition, comparisons between more direct instruction (for example an instructor looking into a webcam) and sketch-like or other-structured instructional videos might be examined to determine if the change in format influences student perception.

Finally, as mentioned above, studies comparing interesting examples with humor, if they can be designed well, may help determine the effectiveness of each approach in

appealing to a wider portion of the audience. The desire for additional or different examples was mentioned specifically by students in both the control and experimental groups in their responses to the open-ended questions. While humor appears to have positive benefits, its appeal can be highly subjective, potentially harming learning because of its alienating nature. One striking theme throughout humor research is the power of interesting or humorous examples. Even in studies without rigorous tests of humor, the addition of humorous examples to instructional material appears to improve learning (Kothari et al., 1993; Ziv, 1988). This approach alone may be worth examining in more depth. Perhaps care should be taken in online videos which incorporate humor, and more effort expended on developing interesting examples that would appeal across genders.

BIBLIOGRAPHY

BIBLIOGRAPHY

Allen, I. E., & Seaman, J. (2011). *Going the Distance: Online Education in the United States, 2011*. Babson Survey Research Group. Retrieved from http://www.onlinelearningsurvey.com/reports/goingthedistance.pdf

Allen, I. E., & Seaman, J. (2013). *Changing Course: Ten Years of Tracking Online Education in the United States*. Babson Survey Research Group. Retrieved from http://www.onlinelearningsurvey.com/reports/changingcourse.pdf

Allen, I. E., & Seaman, J. (2014). *Grade Change: Tracking Online Education in the United States*. Babson Survey Research Group. Retrieved from http://www.onlinelearningsurvey.com/reports/gradechange.pdf

Allison, T. (2012). The Impact of Classroom Performance System-Based Instruction with Peer Instruction upon Student Achievement and Motivation in Eighth Grade Math Students. *Doctoral Dissertations and Projects*. Retrieved from http://digitalcommons.liberty.edu/doctoral/490

Anderson, D. (2011). Taking the “Distance” out of Distance Education: A Humorous Approach to Online Learning. *Journal of Online Learning and Teaching*, *7*(1). Retrieved from http://jolt.merlot.org/vol7no1/anderson_0311.htm

Andeweg, B., Gagestein, S., de Jong, J., & Wackers, M. (2011). “Poke fun at yourself”: the problem of self-deprecating humor. In *SEFI conference Global Engineering Recognition, Sustainability and Mobility*.

Apter, M. J. (1982). *The experience of motivation: the theory of psychological reversals*. London; New York: Academic Press.

Aristotle. (350AD). *Nicomachean Ethics*. (W. D. Ross, Trans.) (Vol. IV Chapter 8). Retrieved from http://classics.mit.edu/Aristotle/nicomachaen.4.iv.html

Arnold, J. M. (1998). “I know it when i see it”: Assessing good teaching. *Research Strategies*, *16*(1), 1–28. doi:10.1016/S0734-3310(98)90003-9

Askildson, L. (2005). Effects of humor in the language classroom: Humor as a pedagogical tool in theory and practice. *Arizona Working Papers in SLAT*, *12*, 45–61.

Baddeley, A. (1992). Working memory. *Science*, *255*(5044), 556–559. doi:10.1126/science.1736359

Bailey, R. A. (2008). *Design of Comparative Experiments.* Leiden: Cambridge University Press. Retrieved from http://public.eblib.com/EBLPublic/PublicView.do?ptiID=336096

Banas, J. A., Dunbar, N., Rodriguez, D., & Liu, S.-J. (2011). A Review of Humor in Educational Settings: Four Decades of Research. *Communication Education*, *60*(1), 115–144.

Beebe, B. R. (2007). *No laughing matter : student perceptions of instructional use of humor in the college classroom*. Capella University.

Behaviourism 101. (2012). Retrieved from http://www.youtube.com/watch?v=RU0zEGWp56Y&feature=youtube_gdata_player

Bergson, H. (1911). *Laughter an essay on the meaning of the comic. Authorized translation by Cloudesley Brereton and Fred Rothwell.* New York: Macmillan. Retrieved from http://www.archive.org/details/laughteressayonm00berguoft/

Berk, R. A., & Nanda, J. P. (1998). Effects of jocular instructional methods on attitudes, anxiety, and achievement in statistics courses. *Humor*, *11*(4), 383–410.

Bernat, C., & Mueller, R. J. (2013). *Individualized Learning with Technology: Meeting the Needs of High School Students*. R&L Education.

Bloom, B. S. (1956). *Taxonomy of educational objectives; the classification of educational goals,*. New York: Longmans, Green.

Bolliger, D. U., Supanakorn, S., & Boggs, C. (2010). Impact of podcasting on student motivation in the online learning environment. *Computers & Education*, *55*(2), 714–722. doi:10.1016/j.compedu.2010.03.004

British Council. (2014). Receptive Skills. Retrieved July 20, 2014, from http://www.teachingenglish.org.uk/knowledge-database/receptive-skills

Bryant, J., Comisky, P. W., Crane, J. S., & Zillmann, D. (1980). Relationship between college teachers' use of humor in the classroom and students' evaluations of their teachers. *Journal of Educational Psychology Journal of Educational Psychology*, *72*, 511–519.

Bryant, J., Comisky, P., & Zillmann, D. (1979). Teachers' Humor in the College Classroom. *Communication Education*, *28*(2), 110.

Buckman, K. H. (2010). *Why Did the Professor Cross the Road? How and Why College Professors Intentionally Use Humor in Their Teaching*. ProQuest LLC.

Chandler, P., & Sweller, J. (1991). Cognitive Load Theory and the Format of Instruction. *Cognition and Instruction*, *8*(4), 293–332. doi:10.2307/3233596

Cho, H. (1995). Humor Mechanisms, Perceived Humor and Their Relationships to Various Executional in Advertising. *Advances in Consumer Research*, *22*(1), 191–197.

Choi, H. J., & Johnson, S. D. (2005). The Effect of Context-Based Video Instruction on Learning and Motivation in Online Courses. *American Journal of Distance Education*, *19*(4), 215–227. doi:10.1207/s15389286ajde1904_3

Cicero. (1875). *Oratory and Orators*. (J. S. Watson, Trans.). New York: Harper and Brothers Publishing. Retrieved from https://archive.org/details/ciceroonoratorya00ciceuoft

Cicero, M. T., Watson, J. S. (John S., & Jones, E. (1875). *Cicero on oratory and orators*. New York : Harper & Brothers. Retrieved from http://archive.org/details/ciceroonoratorya00ciceuoft

Clark, R. C., & Mayer, R. E. (2003). *E-Learning and the science of instruction: proven guidelines for consumers and designers of multimedia learning*. San Francisco, CA: Jossey-Bass/Pfeiffer.

COMM 302. (2014, June 7). Retrieved from http://english.boisestate.edu/techcomm/course-offerings/comm-302/

Cook, D. A., Beckman, T. J., Thomas, K. G., & Thompson, W. G. (2009). Measuring Motivational Characteristics of Courses: Applying Keller's Instructional Materials Motivation Survey to a Web-Based Course. *Academic Medicine November 2009*, *84*(11), 1505–1509. doi:10.1097/ACM.0b013e3181baf56d

Dahlstrom, E. (2012). *ECAR Study of Undergraduate Students and Information Technology, 2012* (Research Report). Louisville, CO: EDUCAUSE Center for Applied Research. Retrieved from http://www.educause/edu/ecar

Dai, D. Y., & Sternberg, R. J. (Eds.). (2004). *Motivation, emotion, and cognition: integrative perspectives on intellectual functioning and development*. Mahwah, N.J.: Lawrence Erlbaum Associates.

Davies, C. (1998). *Jokes and their relation to society*. Berlin; New York: Mouton de Gruyter.

Di Serio, Á., Ibáñez, M. B., & Kloos, C. D. (2013). Impact of an augmented reality system on students' motivation for a visual art course. *Computers & Education*, *68*, 586–596. doi:10.1016/j.compedu.2012.03.002

Dugas, L. (1902). *Psychologie du rire,*. Paris: F. Alcan.

Earleywine, M. (2010). *Humor 101*. New York: Springer Pub. Co. Retrieved from http://public.eblib.com/EBLPublic/PublicView.do?ptiID=635515

EDUCAUSE. (2013). Massive Open Online Course (MOOC). In *EDUCAUSE Library*. Retrieved from http://www.educause.edu/library/massive-open-online-course-mooc

Farrelly, B., & Farrelly, P. (2001). *Shallow Hal*. Twentieth Century Fox Film Corporation.

Ferrante, A. C. (2013). *Sharknado*. Horror.

Fisch, S. M. (2004). *Children's Learning From Educational Television: Sesame Street and Beyond*. Routledge.

Fisher, M. S. (1997). The effect of humor on learning in a planetarium. *Science Education*, *81*(6), 703–713. doi:10.1002/(SICI)1098-237X(199711)81:6<703::AID-SCE7>3.0.CO;2-M

Flaherty, K., Weinberger, M. G., & Gulas, C. S. (2004). The Impact of Perceived Humor, Product Type, and Humor Style in Radio Advertising. *Journal of Current Issues & Research in Advertising (CTC Press)*, *26*(1), 25–36.

Freud, S. (1989). *Jokes and their relation to the unconscious*. (J. Strachey, Trans.). New York: Norton.

Galbraith, K. J. (2011). *The effects of student-sequenced learning objects and student-selected multimedia formats on motivation and achievement in a family finances learning unit*. Idaho State University.

Garner, R. L. (2006). Humor in Pedagogy: How Ha-Ha Can Lead to Aha! *College Teaching*, *54*(1), 177–180.

Garner, R. L., Brown, R., Sanders, S., & Menke, D. J. (1992). "Seductive Details" and Learning from Text. In K. A. Renninger, S. Hidi, & A. Krapp (Eds.), *The Role of Interest in Learning and Development* (pp. 239–254). Hillsdale, N.J.: L. Erlbaum Associates.

Ghaffari, M., & Mohamadi, R. (2012). The Effect of Context (Humorous vs. Non-humorous) on Vocabulary Acquisition and Retention of Iranian EFL Learners. *International Journal of Applied Linguistics & English Literature*, *1*(6).

Gibb, J. (1964, June). *An Experimental Comparison of the Humorous Lecture and the Non Humorous Lecture in Informative Speaking*. University of Utah, Salt.

Gilliland, H., & Mauritsen, H. (1971). Humor in the Classroom. *The Reading Teacher*, *24*(8), 753–761.

Gorham, J., & Christophel, D. M. (1990). The Relationship of Teachers' Use of Humor in the Classroom to Immediacy and Student Learning. *Communication Education*, *39*, 46.

Greene, J. C. (2007). *Mixed methods in social inquiry*. San Francisco, CA: Jossey-Bass.

Gruner, C. R. (1967). Effect of Humor on Speaker Ethos and Audience Information Gain. *JCOM Journal of Communication*, *17*(3), 228–233.

Gruner, C. R. (1970). The effect of humor in dull and interesting informative speeches. *Central States Speech Journal Central States Speech Journal*, *21*(3), 160–166.

Harp, S. F., & Mayer, R. E. (1997). The role of interest in learning from scientific text and illustrations: On the distinction... *Journal of Educational Psychology*, *89*(1).

Harp, S. F., & Mayer, R. E. (1998). How seductive details do their damage: A theory of cognitive interest in science learning. *Journal of Educational Psychology*, *90*(3), 414–434. doi:10.1037/0022-0663.90.3.414

Hativa, N. (2000). *Teaching for Effective Learning in Higher Education*. Springer.

Hidi, S., Renninger, K. A., & Krapp, A. (2004). Interest, a Motivational Variable That Combines Affective and Cognitive Functioning. In D. Y. Dai & R. J. Sternberg (Eds.), *Motivation, emotion, and cognition: integrative perspectives on intellectual functioning and development* (pp. 57–87). Mahwah, N.J.: Lawrence Erlbaum Associates.

Hirumi, A., & Bowers, D. R. (1991). Enhancing Motivation and Acquisition of Coordinate Concepts by Using Concept Trees. *The Journal of Educational Research*, *84*(5), 273–279.

Hobbes, T. (1651). *Leviathan*. St. Paul's Churchyard: Green Dragon. Retrieved from http://www.gutenberg.org/files/3207/3207-h/3207-h.htm

Houser, M. L., Cowan, R. L., & West, D. A. (2007). Investigating a New Education Frontier: Instructor Communication Behavior in CD-ROM TextsDo Traditionally Positive Behaviors Translate into This New Environment? *Communication Quarterly*, *55*(1).

Huang, W., WenyehDiefes-Dux, HeidiImbrie, Peter K. (2006). A preliminary validation of Attention, Relevance, Confidence and Satisfaction model-based Instructional Material Motivational Survey in a computer-based tutorial setting. *British Journal of Educational Technology*, *37*(2), 243–259. doi:10.1111/j.1467-8535.2005.00582.x

Jang, K. S., Hwang, S. Y., Park, S. J., Kim, Y. M., & Kim, M. J. (2005). Effects of a Web-Based Teaching Method on Undergraduate Nursing Students' Learning of Electrocardiography. *Journal of Nursing Education*, *44*(1), 35–9.

Johnson, B., & Christensen, L. B. (2012). *Educational research: quantitative, qualitative, and mixed approaches*. Thousand Oaks, Calif.: SAGE Publications.

Jonas, P. M. (2004). *Secrets of connecting leadership and learning with humor*. Lanham, Md.: ScarecrowEducation.

Jordan, J. (2013, May 6). World's Most Beautiful Woman: Gwyneth Paltrow! *People*, *79*(18). Retrieved from http://www.people.com/people/archive/article/0,,20695704,00.html

Kaplan, R. M., & Pascoe, G. C. (1977). Humorous lectures and humorous examples: Some effects upon comprehension and retention. *Journal of Educational Psychology*, *69*(1), 61–65.

Keller, J. M. (1983). *Use of the ARCS Model of Motivation in Teacher Training. IDD&E Working Paper No. 10.* Syracuse Univ: NY. School of Education.

Keller, J. M. (1987). Development and Use of the ARCS Model of Instructional Design. *Journal of Instructional Development*, *10*(3), 2–10.

Keller, J. M. (2010). *Motivational design for learning and performance: the ARCS model approach*. New York; London: Springer. Retrieved from http://public.eblib.com/EBLPublic/PublicView.do?ptiID=510896

Kenny, D. T. (1955). The contingency of humor appreciation on the stimulus-confirmation of joke-ending expectations. *Journal of abnormal psychology*, *51*(3), 644–8.

Kinde, J. (2013, March 1). Humor Power Tips -- The Superiority Theory of Humor. *Humor Power Tips*, *March 2013*. Retrieved from http://archive.aweber.com/humorpowertips/FmRvA/h/Humor_Power_Tips_The.htm

Kirkpatrick, J. M. (2007). Relation of nursing students' motivational state and learning effort to motivational appeal and learning outcomes in the use of an interactive computer -based multimedia program. *ETD Collection for Purdue University*, 1–155.

Klein, D. M., Bryant, J., & Zillmann, D. (1982). Relationship Between Humor In Introductory Textbooks And Students' Evaluations Of The Texts' Appeal And Effectiveness. *Psychological Reports*, *50*(1), 235–241. doi:10.2466/pr0.1982.50.1.235

Kline, P. (2007). *The handbook of psychological testing*. London; New York: Routledge/Taylor & Francis Group.

Korobkin, D. (1988). Humor in the Classroom: Considerations and Strategies. *College Teaching College Teaching*, *36*(4), 154–158.

Kothari, V., Rana, D. S., & Khade, A. S. (1993). To Be or Not to Be Humorous in Class--That is the Question. *Journal of Marketing Education*, *15*(1).

Levine, J. (1969). Approaches to Humor Appreciation. In J. Levine (Ed.), *Motivation in humor* (pp. 1–27). New York: Atherton Press.

Linnenbrink, E., & Pintrich, P. R. (2004). Role of Affect in Cognitive Processing in Academic Contexts. In D. Y. Dai & R. J. Sternberg (Eds.), *Motivation, emotion, and cognition: integrative perspectives on intellectual functioning and development* (pp. 57–87). Mahwah, N.J.: Lawrence Erlbaum Associates.

Martin, R. A. (2007). *The psychology of humor: an integrative approach*. Amsterdam; Boston: Elsevier Academic Press.

Mayer, R. E. (1989). Systematic thinking fostered by illustrations in scientific text. *Journal of Educational Psychology*, *81*(2), 240–246. doi:10.1037/0022-0663.81.2.240

Mayer, R. E. (1999). *The promise of educational psychology: learning in the content areas*. Upper Saddle River, N.J.: Merrill.

Mayer, R. E. (2002). Rote versus Meaningful Learning. *Theory into Practice*, *41*(4), 226–232.

Mayer, R. E. (2007). Research-Based Guidelines for Multimedia Instruction. *Reviews of Human Factors and Ergonomics*, *3*(1), 127–147. doi:10.1518/155723408X299861

Mayer, R. E. (2009). *Multimedia Learning.* (2nd ed.). Leiden: Cambridge University Press. Retrieved from http://public.eblib.com/EBLPublic/PublicView.do?ptiID=424624

Mayer, R. E. (2014). Incorporating motivation into multimedia learning. *Learning and Instruction*, *29*, 171–173. doi:10.1016/j.learninstruc.2013.04.003

Mayer, R. E., & Anderson, R. B. (1991). Animations need narrations: An experimental test of a dual-coding hypothesis. *Journal of Educational Psychology*, *83*(4), 484–490. doi:10.1037/0022-0663.83.4.484

Mayer, R. E., & Anderson, R. B. (1992). The instructive animation: Helping students build connections between words and pictures in multimedia learning. *Journal of Educational Psychology*, *84*(4), 444–452. doi:10.1037/0022-0663.84.4.444

Mayer, R. E., Bove, W., Bryman, A., Mars, R., & Tapangco, L. (1996). When less is more: Meaningful learning from visual and verbal summaries of science textbook lessons. *Journal of Educational Psychology*, *88*(1), 64–73. doi:10.1037/0022-0663.88.1.64

Mayer, R. E., & Chandler, P. (2001). When Learning Is Just a Click Away: Does Simple User Interaction Foster Deeper Understanding... *Journal of Educational Psychology*, *93*(2).

Mayer, R. E., & Gallini, J. K. (1990). When Is an Illustration Worth Ten Thousand Words? *Journal of Educational Psychology*, *82*(4).

Mayer, R. E., Heiser, J., & Lonn, S. (2001). Cognitive constraints on multimedia learning: When presenting more material results in less understanding. *Journal of Educational Psychology*, *93*(1), 187–198. doi:10.1037/0022-0663.93.1.187

Mayer, R. E., & Mathias, A., Wetzell, Karen. (2002). Fostering understanding of multimedia messages through pre-training: Evidence for a two-stage theory of mental model construction. *Journal of Experimental Psychology: Applied Journal of Experimental Psychology: Applied*, *8*(3), 147–154.

Mayer, R. E., & Moreno, R. (1998). A split-attention effect in multimedia learning: Evidence for dual processing systems in working memory. *Journal of Educational Psychology*, *90*(2), 312–320. doi:10.1037/0022-0663.90.2.312

Mayer, R. E., & Moreno, R. (2003). Nine Ways to Reduce Cognitive Load in Multimedia Learning. *Educational Psychologist*, *38*(1), 43–52.

Mayer, R. E., & Sims, V. K. (1994). For Whom Is a Picture Worth a Thousand Words? Extensions of a Dual-Coding Theory of Multimedia Learning. *Journal of Educational Psychology*, *86*(3), 389–401.

Mayer, R. E., & Sobko, K., Mautone, Patricia D. (2003). Social Cues in Multimedia Learning: Role of Speaker's Voice. *Journal of Educational Psychology*, *95*(2), 419–25.

McCroskey, J. C. (1966). Scales for the measurement of ethos. *Speech Monographs*, *33*(1), 65–72. doi:10.1080/03637756609375482

McGhee, P. E., Ruch, W., & Hehl, F.-J. (1990). A personality-based model of humor development during adulthood. *HUMOR: International Journal of Humor Research*, *3*(2), 119–146. doi:10.1515/humr.1990.3.2.119

Moffitt, J. (2011). *Talking Funny*. Comedy, Talk-Show.

Moreno, R. (2006). Does the modality principle hold for different media? A test of the method-affects-learning hypothesis. *Journal of Computer Assisted Learning*, *22*(3), 149–158. doi:10.1111/j.1365-2729.2006.00170.x

Moreno, R. (2009). Learning from animated classroom exemplars: the case for guiding student teachers' observations with metacognitive prompts. *Educational Research and Evaluation*, *15*(5), 487–501. doi:10.1080/13803610903444592

Moreno, R., & Mayer, R. E. (1999). Cognitive principles of multimedia learning: The role of modality and contiguity. *Journal of Educational Psychology*, *91*(2), 358–368. doi:10.1037/0022-0663.91.2.358

Moreno, R., & Mayer, R. E. (2000). Engaging students in active learning: The case for personalized multimedia messages. *Journal of Educational Psychology*, *92*(4), 724–733. doi:10.1037/0022-0663.92.4.724

Moreno, R., & Mayer, R. E. (2004). Personalized Messages That Promote Science Learning in Virtual Environments. *Journal of Educational Psychology*, *96*(1), 165–173. doi:10.1037/0022-0663.96.1.165

Morreall, J. (Ed.). (1987). *The Philosophy of laughter and humor*. Albany: State University of New York Press.

Mundorff, N., Bhatia, A., Zillman, D., Lester, P., & Robertson, S. (2009). Gender differences in humor appreciation. *Humor - International Journal of Humor Research*, *1*(3), 231–244. doi:10.1515/humr.1988.1.3.231

Neuliep, J. W. (1991). An examination of the content of high school teachers' humor in the classroom and the development... *Communication Education*, *40*(4), 343.

Neville, A. J. (2009). Problem-Based Learning and Medical Education Forty Years On. *Medical Principles and Practice*, *18*(1), 1–9. doi:10.1159/000163038

New Scientist. (2012, January 30). Google says one hour of video is now being uploaded to YouTube every second. *Washington Post*. Retrieved from http://articles.washingtonpost.com/2012-01-30/national/35439542_1_youtube-channels-google-figures-show

Paivio, A. (2007). *Mind and its evolution: a dual coding theoretical approach*. Mahwah, N.J.: L. Erlbaum Associates.

Petry, B. L. (1998). Adding Zest to OPAC Instruction. *College & Undergraduate Libraries*, *5*(2), 75–85. doi:10.1300/J106v05n02_11

Pien, D., & Rothbart, M. K. (1976). Incongruity and Resolution in Children's Humor: A Reexamination. *Child Development*, *47*(4), 966–971. doi:10.2307/1128432

Pittenger, A., Aaron. (2010). Influence of motivational design on completion rates in online self-study pharmacy-content courses. *Distance Education*, *31*(3), 275–293. doi:10.1080/01587919.2010.513953

Plato. (1990). *Euthyphro, Apology, Crito, Phaedo, Phaedrus*. (H. N. Fowler, Trans.). Cambridge, Mass.: Harvard University Press. Retrieved from http://data.perseus.org/citations/urn:cts:greekLit:tlg0059.tlg010.perseus-eng1:50a

Rey, H. A. (1969). *Curious George*. Boston: Houghton Mifflin.

Rodgers, D. L., & Withrow-Thorton, B. J. (2005). The Effect of Instructional Media on Learner Motivation. *International Journal of Instructional Media*, *32*(4), 333–342.

Rothbart, M. K. (1996). Incongruity, Problem-Solving, and Laughter. In A. J. Chapman & H. C. Foot (Eds.), *Humor and laughter: theory, research, and applications* (pp. 37–54). New Brunswick, N.J., U.S.A.: Transaction Publishers.

Ruch, W. (1992). Assessment of appreciation of humor: Studies with the 3WD humor test. In C. D. Spielberger & J. N. Butcher (Eds.), *Advances in Personality Assessment* (pp. 27–75). Psychology Press.

Salkin, L. (1975). *The 2000 Year Old Man*. Animation, Comedy.

Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). *Motivation in education: theory, research, and applications*. Upper Saddle River, N.J.: Pearson/Merrill Prentice Hall.

Seyer, P. C., McBeath, San Jose State University, & Faculty and Instructional Development Office. (1981). *Item analysis: tests and evaluation unit*. San Jose, Calif.: Faculty and Instructional Development Office, San Jose State University.

Shultz, T. R. (1996). A Cognitive-Development Analysis of Humour. In A. J. Chapman & H. C. Foot (Eds.), *Humor and laughter: theory, research, and applications* (pp. 11–36). New Brunswick, N.J., U.S.A.: Transaction Publishers.

Smith, R. (1959). Development of a Semantic Differential for Use with Speech Related Concepts. *Speech Monographs*, *26*(4), 263.

Song, S. H., & Keller, J. M. (2001). Effectiveness of motivationally adaptive computer-assisted instruction on the dynamic aspects of motivation. *Educational Technology, Research and Development*, *49*(2), 5.

Spencer, H. (1911). *Essays on education, etc.* London; New York: J.M. Dent; E.P. Dutton.

Suls, J. M. (1972). A two-stage model for the appreciation of jokes and cartoons. In J. H. Goldstein & P. E. McGhee (Eds.), *The psychology of humor; theoretical perspectives and empirical issues.* (pp. 81–100). New York: Academic Press.

Tamborini, R., & Zillmann, D. (1981). College Students' Perception of Lecturers Using Humor. *Perceptual and Motor Skills*, *52*(2), 427–432. doi:10.2466/pms.1981.52.2.427

Torok, S. E., McMorris, R. F., & Lin, W.-C. (2004). Is Humor an Appreciated Teaching Tool? Perceptions of Professors' Teaching Styles and Use of Humor. *College Teaching*, *52*(1), 14–20.

Walker, B. E. (2006). Using humor in library instruction. *Reference Services Review*, *34*(1), 117–128. doi:10.1108/00907320610648806

Wanzer, M. B., Frymier, A. B., Wojtaszczyk, A. M., & Smith, T. (2006). Appropriate and Inappropriate Uses of Humor by Teachers. *Communication Education*, *55*(2), 178–196. doi:10.1080/03634520600566132

Weinberger, M. G., & Gulas, C. S. (1992). The Impact of Humor in Advertising: A Review. *Journal of Advertising*, *21*(4), 35–59.

Weiner, B. (1992). Motivation. In M. C. Alkin, M. Linden, J. Noel, & K. Ray (Eds.), *Encyclopedia of Educational Research* (Vols. 1-4, Vol. 3, pp. 860–865). New York; Toronto; New York: Macmillan ; Maxwell Macmillan Canada ; Maxwell Macmillan International.

Wright, S. (2007). *I Still Have a Pony*. Comedy Central Rec.

Yang, Y.-C., & Chin, W.-K. (1997). Motivational Analyses on the Effects of Type of Instructional Control on Learning from Computer-Based Instruction. *Journal of Educational Technology Systems*, *25*(1), 25–35.

Zillmann, D., Williams, B. R., Bryant, J., Boynton, K. R., & Wolf, M. A. (1980). Acquisition of information from educational television programs as a function of differently paced humorous inserts. *Journal of Educational Psychology*, *72*(2), 170–180. doi:10.1037/0022-0663.72.2.170

Zilmann, D., Williams, B. R., Bryant, J., Boynton, K. R., & Wolf, M. A. (1980). Acquisition of information from educational television programs as a function of differently paced humorous inserts. *Journal of Educational Psychology*, *72*(2), 170–180. doi:10.1037/0022-0663.72.2.170

Ziv, A. (1988). Teaching and Learning with Humor: Experiment and Replication. *Journal of Experimental Education*, *57*(1), 5–15.

APPENDICES

Appendix A Learning Assessment – Pilot 1

The following are the learning assessment items for Pilot 1, except the matching question, which is included in the learning assessment items for Pilots 2,3 and the final study.

Please answer as best as you can based on the information from the video. Please notice that you can choose more than one answer for every question. There may or may not be more than one right answer.

Q1.1 When you _____, your version has less text and content than the original source.

Summarize

Paraphrase

Quote

Q1.2 When you _____, your version includes all of the main points as the original source.

Summarize

Paraphrase

Quote

Q1.3 When you _____, your version includes text from the original source.

Summarize

Paraphrase

Quote

Q1.4 When you _____, your version uses only your own words.

Summarize

Paraphrase

Quote

Q1.5 When you _____, you cite your source.

Summarize

Paraphrase

Quote

Appendix B Learning Assessment – Pilots 2-3, Final Study

Overall – 55 points

Knowledge Questions (27 points)

1. List 3 ways to include a source in your paper, and if each should be cited. (8 points)

Summarizing (1) – yes (1). Paraphrasing (1) – yes (1). Quoting (1) – yes (1). Common knowledge (1) – no (1).

2. Explain how to summarize a source. (4 points)

Explain only the main point (1), in your own words (1), in less words than the original text (1), and cite it (1).

3. Explain how to quote a source. (8 points)

Frame the quote in your own words (1), use exact (1) key (1) sentences or phrases from the source (1) within quote marks (1), and cite (1) with a page number (1). Don't quote too much (1).

4. Explain how to paraphrase a source. (7 points)

Explain all of the main points (1) in your own words (1) and with your own sentence structure (1), and cite it (1). It should be longer than a summary (1), shorter than the original text (1), and accurate to the source material (1).

Comprehension Questions (19 points – 16 open-ended, 3 matching)

1. Please explain the difference between summarizing and paraphrasing: (3 points)

Summarizing is putting the main point in your own words (1) – paraphrasing is putting all of the main points in your own words (1), and summarizing is shorter (1).

2. Please explain the difference between common knowledge and other / content: (6 points)

   Common knowledge are things everyone knows (1). Gives an example of common knowledge (1). Other content needs to be cited (1) because it comes from another source (1) and is not something everyone knows (1). Gives example of other content (1).

3. Please explain how often to summarize, paraphrase, and quote: (7 points)

   Paraphrase and summarize more, quote less (1). Quote when you can't say it better yourself (1). Summarize with the overall point (1). Paraphrase with more detail (1). Use all three (1), and spread them out in the paper (1). Use these every time it is not common knowledge (1).

[The following are the three matching questions. Students were given a text and then asked to identify the paraphrase, quote, and summary version of it. This question is worth 3 points].

[Below is the original text].

The following text comes from a news article about technology trends:

"Accompanying the hype around Google Glass this year was an undercurrent of privacy concerns. 'Since Google Glass wearers can easily photograph or record what

they're seeing, quietly access information from the web or get distracted by a stream of digital information, good manners will dictate removing them in various intimate, social or business contexts,' notes the JWT report."

http://adage.com/article/datadriven-marketing/10-privacy-trends-marketers-watch-2014/245866/

[Below are the three options].

Please match the type of citation with the citation text below. (3 points)

Google Glass will make technology manners even more important because device use is so opaque to everyone but the wearer (cite, year).

[Correct answer]: *Summary*

Google Glass will make technology manners even more important because "wearers can easily photograph or record what they're seeing" and view distracting information with little movement (cite, year, page).

[Correct answer]: *Quote*

Google Glass will make technology manners even more important because wearers can record, send, and view information without anyone really knowing (cite, year).

[Correct answer]: *Paraphrase*

Application Questions (9 points)

[The application questions gave students a paragraph of text and asked them to summarize, quote, and paraphrase it].

The following text comes from information about the giant squid:

The giant squid remains largely a mystery to scientists despite being the biggest invertebrate on Earth. The Giant squid, along with their cousin, the Colossal squid, have the largest eyes in the animal kingdom, measuring some 10 inches (25 centimeters) in diameter. These massive organs allow them to detect objects in the lightless depths where most other animals would see nothing.

Washington, N. G. S. (2014). Giant Squid - National Geographic. Retrieved January 22, 2014, from http://animals.nationalgeographic.com/animals/invertebrates/giant-squid/, p. 1.

Please write a summary, quote, and paraphrase of the paragraph above.

1. Summary: (2 points)

   Only 1 main idea (1). Citation, whether or not correct, is included (1).

2. Quote (5 points)

   Introduce quote with own words (1). Cite the quote (1). Page number in citation (1). Quote is brief (1). Quote marks (1).

3. Paraphrase (2 points).

   Citation, whether or not correct (1). More than 1 main idea (1). More than 1 main idea was measured by counting how many of the four main ideas of the text they included. If they included three or more, they received a point.

Appendix C Demographic Survey

What State Do You Live In? (drop-down box)

About how many hours a week do you generally spend studying?

- 0 hours per week (1)
- 1-2 hours per week (2)
- 2-3 hours per week (3)
- 3-4 hours per week (4)
- 4-5 hours per week (5)
- 5 hours or more per week (6)

What type of school are you enrolled in?

- 2-Year College (1)
- 4-Year College (2)
- Graduate School (3)
- Other (4)

What is your current Class Year?

- Freshman (1)
- Sophomore (2)
- Junior (3)
- Senior (4)
- Graduate Student (5)

What is your age?

- Under 18 (1)
- 18-20 (2)
- 21-23 (3)
- 24-25 (4)
- Over 25 (5)

What is your gender?

- Male (1)
- Female (2)

What is your current or intended major?

Appendix D Instructional Materials Motivation Survey (IMMS)

Instructions

Instructional Materials Motivation Survey

There are 36 statements in this section. Please think about each statement in relation to the video you have just watched and indicate how true it is.

Give the answer that truly applies to you, and not what you would like to be true or what you think others want to hear.

Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

Use the following values to indicate your response to each item.

1 (or A) = Not true

2 (or B) = Slightly true

3 (or C) = Moderately true

4 (or D) = Mostly true

5 (or E) = Very true

1. When I first watched this video, I had the impression that it would be easy for me.

2. There was something interesting at the beginning of this video that got my attention.

3. This video was more difficult to understand than I would like for it to be.

4. After watching the introduction, I felt confident that I knew what I was supposed to learn from this video.

5. Completing the questions after the video gave me a satisfying feeling of accomplishment.

6. It is clear to me how the content of this video is related to things I already know.

7. Many parts of the video had so much information that it was hard to pick out and remember the important points.

8. This video was eye-catching.

9. There were stories, pictures, or examples that showed me how this material could be important to some people.

10. Watching this video and completing the questions successfully was important to me.

11. The quality of the video helped hold my attention.

12. This video was so abstract that it was hard to keep my attention.

13. As I watched this video, I was confident that I could learn the content.

14. I enjoyed this video so much that I would like to know more about this topic.

15. Sections of this video were dry and unappealing.

16. The content of this video was relevant to my interests.

17. The way the information was arranged in the video helped keep my attention.

18. There were explanations or examples of how people use the knowledge in this video.

19. The questions after the video were too difficult.

20. This video had things that stimulated my curiosity.

21. I really enjoyed watching this video.

22. The amount of repetition in this video caused me to get bored sometimes.

23. The content and style of this video conveyed the impression that its content is worth knowing.

24. I learned some things that were surprising or unexpected.

25. After watching this video for a while I was confident that I would be able to pass a test on it.

26. This video was not relevant to my needs because I already knew most of the information given.

27. The wording of feedback after the questions, or of other comments in this video, helped me feel rewarded for my effort.

28. The variety in the video helped keep my attention on the lesson.

29. The style of the video was boring.

30. I could relate the content of this video to things I have seen, done, or thought about in my own life.

31. There were so many words on each screen that it was irritating.

32. It felt good to successfully watch this video and complete the questions.

33. The content of this video will be useful to me.

34. I could not really understand quite a bit of the material in this video.

35. The good organization of the content helped me be confident that I would learn from this video.

36. It was a pleasure to watch such a well-designed video.

Appendix E Humor Manipulation Check (HMC) – Pilots 2,3, and Final Study

How would you rate the video you just watched on the scale below?

1. Funny :____:____:____:____:____:____:____:____: Not Funny

2. Not Humorous :____:____:____:____:____:____:____:____: Humorous

3. Not Amusing :____:____:____:____:____:____:____:____: Amusing

Appendix F Open-Ended Student Perception Questions

Both Control and Experimental Conditions:

What changes would make to the video you watched to make it a better learning experience?

Experimental Condition:

What are your thoughts about the humor in the video you just viewed?

How did the humor in the video you just viewed relate to the educational content?

What are your thoughts about humor in instructional videos you've seen before?

Appendix G Responses to Open-Ended Student Perception Questions

What changes would make to the video you watched to make it a better learning experience? (Control Group)

just the subject itself was boring...maybe have real people or something that is more eye grabbing..

add more humor :]

Add more variety to keep attention.

I cannot think of any.

Its just a dry topic but the voice over makes it decent.

make it a little bit slower so it's easier to follow

Maybe change the cartoons a bit or change the things of common knowledge for people.

More colors

more examples to keep the audience engaged

More explosions

More varied information and more complicated examples.

N/A

none

not as many words and maybe color but then again I am a color kind of girl

Some background music, which containing no lyric & not distracting, might help keeping the entertaining factor of the video. Maybe a bit more color?

The video wasn't bad, I would rather a video then anything else.

I actually liked it. I think it was useful and entertaining.

I think it was good. No changes

I thought it was pretty educational. I liked it.

I would not make any changes. This video is far better then others that are similar.

It was well done.

Maybe repeat some of the info so that you can ingest the information. I found it very helpful but would have to watch the video a few times to let it sink in.

Nothing I thought the video was a good learning experience for the content that was being portrayed.

nothing, it was very well made

The picture of the BSU Library gave it a rather dull first impression. The content of the video itself was interesting and creatively done, but the beginning... I would remove the picture of the BSU library and replace it with something more interesting.

The video provides very useful information in a very simple format. Some more examples and some more visual stimulation could make it better. I would like to have numerous examples , then maybe a way to try your skills?

VIDEO WOULD NOT LOAD.

What changes would make to the video you watched to make it a better learning experience? (Experimental)

Add more color to it, the white and black objects were a little boring at times.

Cut out the chatting.

Give another example then the Pledge of Allegiance

I think that it would be better if it was a little shorter and more to the point

I wouldn't have used the cartoon animations.

It was very cheesy and the jokes were kind of irrelevant to the video. I like the ideas of having jokes to keep it light and entertaining but ditch the shark jokes. It lost my attention after about a minute.

Juvenile and obnoxious

less shark stuff randomly thrown in after the first little bit

Not so childish

Stop asking the same questions.

I don't think I would make any changes.

I thought it was easy to understand and well organized, however, the humor (sharks, socks, costume, etc.) was a bit distracting.

I thought sometimes it got to be a little too random and off topic. I think if I really needed to and wanted to learn about citing sources then I would just want the informational and skip the funny. However, I really enjoyed the humor.

I would catch the eye of the people by showing something everyone knows like a battle of WWI or something that everyone knows and could relate to. On the other

hand I would go as far as finding a topic everyone is talking about over the internet and use tat to peak interest.

maybe not so black and white

none

Something that I would change is the time looked at each quote, paraphrase, and summery sections. I didn't have much time to absorb the example.

Using Sharknado does date the film, a more "for all time" reference might be used.

I think it was good. Maybe a little more colorful.

I thought it was great! Maybe give your characters bodies but other than that good job. The video may have needed to include the source you used to get the information as well...

I would not have been able to do this better. Loved it!

It's cut e and to the point

None, I like the animation.

SOCK PUPPETS!!!!! no, just kidding. I think for the content it was put together very nicely. It's like GoAnimate, but on the cheap side, which is not bad.

What are your thoughts about the humor in the video you just viewed? (Experimental)

I'm not a fan of shark-nato so I didn't get the references and fast-forwarded through those parts.

I did not think it was very humorous

It was not very funny to me. I was more of laughing at it then with it.

Not funny

Overkill

It was okay, not too funny.

It was almost annoying, but I chuckled, so I would not say I would complain.

It wasn't crazy funny or had me laughing but was amusing enough to keep watching.

I like the originality but it just wasn't my kind of humor but that doesn't mean it couldn't be someone else's.

a little dry

I didn't find it too humorous, but to another audience I'm sure it would be hilarious.

Sweety

Liked it. It kept it entertaining.

"I loved the shark joke, it make the video flow with a good plot point.

Sharknado! Nuff said."

I thought the humor was a great addition to the video. It made me a little more interested in learning what it was about. If there was no humor I would probably not have paid attention to the video.

Kept my attention. Made it more interesting. Actually helped me to learn the concepts of paraphrasing, quoting, and summarizing better than I did before.

pretty good, good use of current movie titles

it was good dry humor

It was just enough to keep my attention but not so corny and over board that I stopped paying attention

Great. Loved the voices.

It was cute.

I really liked it. It reminded me of the Brain Pop days in High school.

It was overall entertaining.

Funny and kept my attention.

What are your thoughts about humor in instructional videos you've seen before? (Experimental)

I do not remember

Sometimes it is not done well and causes more harm then help.

Usually I find humor kind of dumb, but in this context I think it helped make a somewhat dull topic easier to pay attention to.

Humor isn't seen as well in instructional videos usually but I thought this was a good balance.

They make pay attention easier, but some try to hard this video was a good blend

I have seen some others that were funny with the way they used real people in the videos. Others seem to be dry because they are held by ethics of the university and are not able to branch out to get people involved.

If it's relevant to what I am learning about I like it, but if it isn't, it is kind of pointless.

As I stated above some have been well designed to keep my attention even if the topic is not my thing, but others have been off on what humor generally is, so it actually isn't humorous and I lose the ability to want to absorb the content.

Usually not funny - I'd rather a shorter, more direct video. Reminded me of that one person in class who never stops interrupting.

I think some of the videos have been funny, but more often than not it proves too difficult to make this content funny.

Less educational the way this video was created

They were pretty annoying.

I do like them, they allow me to be amused.

I think that humor could help students pay attention more

Sometimes it can be helpful, especially if it is somewhat boring and loooong. I didn't not like the humor in this video but I didn't love it.

I think its a great addition. For example, Bill Nye the Science Guy was a great man.

I always think it helps me learn, relate, and retain information better.

they fit well together

it makes it easier to learn and understand the learning material

I like it - makes it less boring.

I like it

They make the content easier to memorize, especially seeing shark socks, I will see that in my head when I think about citing now.

Humor is needed in educational videos, because to honest I don't want to go back to the old film projector days and a want to fall asleep 2 minutes into it. When will there be more? Where can I access them?

I like the idea of humor in teaching. This is a concept that educational shows like Sesame Street, The Electric Company, and School House Rock have been using for years successfully teaching generations of people all kinds of things.

Appendix H Final Video Script

[Teacher] Hey, Joe.

[Teacher] Let's talk about how to cite your sources. You have a paper coming up, right?

[Joe] My paper combines meteorology and biology.

[Teacher] Well that's interesting, like...the effect of rain on frogs, or something?

[Joe] The effect of sharks on tornadoes!

[Teacher] Did you -

[Joe] SHARKNADO!!!

[Joe] Is it a documentary or not,

[Teacher] It's not.

[Joe] that's my paper.

[Teacher] It's not.

[Joe] You can read my paper and then decide. Anyway. Citing sources - I think I know this, but remind me.

[Teacher] Ok, three ways to include sources are summarizing, quoting, and paraphrasing.

[Joe] They all sound the same.

[Teacher] Yeah. I'll explain how each one is different and how to use them. Something to remember. Always cite. With summarizing, quoting, and paraphrasing, always cite your source. That's how your instructor knows it's a source. If there's no citation they'll assume you came up with it, or that it's common knowledge.

[Joe] Common knowledge?

[Teacher] I don't want to get too much into it, but common knowledge are things everyone knows. Like there are seven days in a week, slavery was a key issue in the Civil War, the state bird of Idaho is the Mountain Bluebird.

[Joe] The earth is round.

[Teacher] Everyone knows those things, you don't have to cite them. But more detailed information, things everyone wouldn't know, you need to cite.

[Joe] I know a lot about sharks.

[Teacher] Impressive.

[Joe] I'm a little....ob....sessed.

[Teacher] So, if we look-

[Joe] If you could see my feet, I'm wearing shark socks. Actually they're not socks they're shark pajamas with footies. The hood is a mouth so it looks like it's always biting my head. (Pause). Let's talk about sources.

[Teacher] So first, summarizing. I'd repeat my understanding of the main point. I wouldn't get into details. Summarizing is just the overall message, in my own words.

[Joe] Just the overall message. Huh!

[Teacher] I'm saying the same thing, but in my own words and in my own way. That's a summary. Next, quoting. I'd set up the quote in my own words, and I'd use the words that have the biggest impact. And when you quote, you add a page number to the citation.

[Joe] Use the parts that have the biggest impact.

[Teacher] Avoid quoting too much text. Also avoid quoting all the time.

[Joe] What was the third way?

[Teacher] Paraphrasing. In summarizing, you give one main point, but in paraphrasing you give all the main points.

[Joe] It's a more detailed summary.

[Teacher] Right. With summarizing and paraphrasing you can change the order. Be as accurate as possible. Don't misrepresent the source. If you said the source said it, someone should be able to go to the source and find it. Put it in your own words, and your own sentence structure. Don't just copy and paste the source then change enough words to make it look like a paraphrase.

[Joe] Cool.

[Teacher] So, let's look at another example and I want you to give me a summary, quote, and paraphrase of it.

[Joe] First, a shark is mutated or let into an enclosed space it shouldn't be in, like SeaWorld. Then, we meet a likeable person who will fight the shark at the end-

[Teacher] How about something else?

[Joe] Oh, like a documentary? Have you seen that one where the shark jumps into the air-

[Teacher] No sharks.

[Joe] No....sharks? I guess we could do octopuses-

[Teacher] How about the Pledge of Allegiance? Everybody knows the Pledge of Allegiance.

[Joe] To...sharks?

[Teacher] To the flag, TO THE FLAG!

[Joe] Oh, ok ok ok, yeah, that one. Got it. Ok, the original is, I pledge Allegiance to the flag of the United States of America and to the Republic for which it stands, one nation under God, indivisible, with Liberty and Justice for all.

[Teacher] Ok. What would a summary be?

[Joe] I will be loyal to the flag and the USA (Pledge of Allegiance, 1892).

[Teacher] Good. You hit the main point, and you did it in your own words. And you cited. Now, how about a quote.

[Joe] Um, I will be loyal to the flag "and to the Republic for which it stands" (Pledge of Allegiance, 1892, p. 1).

[Teacher] Great! You set up the quote in your own words, and you used big impact text, but not too much, from the source. And you cited a page number.

[Joe] Now a paraphrase. Let's see. I will be loyal to the flag and to the USA, a nation established in unity, equality, and faith (Pledge of Allegiance, 1892).

[Teacher] Yes. You hit each point of the source, and you did it in your own words, your own structure, and you cited it.

[Joe] So when do I quote, and when do I summarize?

[Teacher] Hmm, spread them out. Summarize and paraphrase more than you quote. Quote when there's a sentence or phrase you just really want to use. And always cite.

[Joe] Thanks, I think I got it.

[Teacher] Cool! Well, good luck on your paper.

[Joe] Thanks for your help. Have some shark socks.

[Teacher] I will not wear those.

[Joe] They make it look like a shark is eating your foot.

[Teacher] Actually that's pretty cool.

[Joe] Yes it is.

[Teacher] Are you really wearing jammies?

VITA

VITA

Hans Aagard finished a Bachelor of Arts degree in Linguistics with a minor in Computers in the Humanities in 2001. He worked for a year in an ESL software company before returning to school to pursue a Master of Science degree from Purdue University in Educational Technology, which he completed in 2004. He then started his PhD, taking time off for a few years to work as an instructional designer and trainer for Purdue, then Boise State University. He will graduate in December of 2014 with his PhD in Learning Design and Technology.

Hans' teaching experience began as a software trainer while an undergraduate student, teaching web design software to faculty and staff at Brigham Young University. After graduating he developed online tutorials for an ESL company. When he started graduate school he became a TA for EDCI 270, then EDCI 271, and co-taught two graduate-level courses with Dr. Jennifer Richardson. He also became a teaching assistant for the Center for Instructional Excellence, where he contributed to faculty training and one-on-one consulting about teaching. Most recently he has developed and facilitated workshops for faculty at both Purdue and Boise State University on instructional design, educational technology, and pedagogy. In addition, he currently teaches a handful of library sessions to undergraduate students every semester.

Hans' publications have focused on educational technology – online learning tools and online teaching. He has given presentations at several national conferences on these topics. He has also served as a panel moderator and workshop presenter.

PUBLICATIONS

PUBLICATIONS

Aagard, H., Bowen, K., Olesova, L. (2010). Hotseat: Opening the Backchannel in Large Lectures. EDUCAUSE Quarterly, http://www.educause.edu/ero/article/hotseat-opening-backchannel-large-lectures.

Richardson, J.C. Ertmer, P., Aagard, H., Ottenbreit-Leftwich, A., Yang, D. & Mack, N. (Summer, 2007). The Digital Age Literacy Professional Development Initiative: Factors Influencing Teachers' Implementation of Skills and Strategies. Teacher Education & Practice, 20(3), 239-262.

Richardson, J.C., Aagard, H. & Stickman, A. (October, 2006). Guidelines for mentoring graduate students in best practices for teaching online courses. Annual Meeting of the Association for Educational Communications and Technology: Dallas, TX.

Huang, D. W., Aagard, H., Diefes-Dux, H. (2004). Impact of Cognitive-based Instructional Intervention on Learning Motivation: The Implementation of Student-made Glossary in a Programming-oriented Engineering Problem-solving Course and Its Impact on Learning Motivation. Paper presented at the AECT Annual Convention, October, 2004; Chicago, IL.