ABSTRACT

EXAMINING LEARNER-CENTERED TRAINING WITH TEEN VOLUNTEER STAFF AT AN AQUARIUM

By

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This research project examined the effects of a training program that focused on helping youth volunteers create a learner-centered interaction at an Aquarium. This study explored whether this learner centered training resulted in an increased ability to identify learner-centered engagement as well as reported changes in practice.

Most research on training programs and professional development, that introduces learner-centered strategies examines adult teachers working in formal environments. This study examined youth volunteer staff in an informal science institution that participated in a weekly 1-hour training for 4 weeks during their 8 week long summer volunteer program.

The data showed that some of topics introduced in the learner centered training, such as the importance of visitors' prior knowledge and the use of objects, were identified more often as good practice after the training. In addition, participants seemed to hold on to some of their original perceptions of good practices, such as providing positive reinforcement and modifying their physical posture to make the visitors feel

comfortable. The investigation also revealed that conversation patterns changed in some participants' practice as a result of the training.

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CHAPTER 1

INTRODUCTION

The Aquarium of the Pacific (AOP) is the fourth highest attended, not for profit aquarium in the United States, serving nearly 1.5 million visitors annually. Like all informal science institutions (ISIs), the Aquarium is a place where visitors have the opportunity to engage in and learn science. The combination of exhibitry, hands-on activities, signage, presentations, as well as the chance to interact with live animals all contribute to the visitors' experience. The visitors' own motivations and interests also influence how they experience and engage in learning at the Aquarium (Falk, Moussouri, & Coulson, 1998). It is necessary for informal science institutions to consider these interests and create a learner-centered experience for their visitors. By providing a facilitator who is more knowledgeable about particular topics that are of interest to the visitor, a visit to the Aquarium can become a meaningful learning experience (Borun, Chambers, Dritsas, & Johnson, 1997). The AOP relies heavily on their "Interpretation staff," which can be defined as staff members whose role and responsibilities are to interact with, and facilitate learning experiences for the visitor. The interpretation staff is comprised of part- and full-time paid staff, as well as adult and youth volunteer staff.

One such group of interpretation staff are those who participate in the "VolunTEEN" program. This program is intended for high school students from the ages of 14-16 to earn service hours by volunteering at the Aquarium interacting with guests throughout the galleries. These students are required to complete a total of 80 hours of

volunteer service and training. As with all of our other interpretation staff, the VolunTEEN program includes training on topics related to the animals and exhibits. VolunTEENs are assigned to 14 different interpretive opportunities such as cart, exhibits and interactive touch labs. The carts were mobile exhibits that had biofacts such as a real crab molt where the teens could roll the cart in front of the permanent giant spider crab exhibit to provide more information about how these animals molt. Other stations included interpretation opportunities near exhibits such as next to the Puffin exhibit, where the VolunTEENs would interact with people and provide information about the birds. Carts and stations were usually independently run by the VolunTEENs. Touch labs, where Aquarium guests get to interact with the animals, are usually staffed by both a VolunTEEN as well as an adult volunteer or paid staff.

The initial training that the VolunTEENs received lasts 16 hours. During this training, the VolunTEENs learn about the animals and topics they would be discussing at their stations. They are also informed of uniform protocols, safety policies and procedures and information on the Aquarium itself. After the initial training, the volunteers are then required to go out onto the Aquarium floor and interact with the guests. At this point they have received the information needed to discuss the topic of their station and on-floor assignments. However, training on how to interact with guests is very limited. During the training the teens are typically granted the opportunity to practice and role play with fellow VolunTEENs and once on the floor they are coached by VolunTEEN Mentors, who are peer volunteers who have completed the VolunTEEN program. The program's staff is aware that the 16-hour initial training has its limitations.

The VolunTEENs have a short amount of time to gain interpretation skills that allow them to interact with guests by creating a learner-centered experience.

Bevan and Xanthoudaki explain that "on the floor" educators in informal science institutions come from a variety of backgrounds and a variation of fluctuating congruency of science or pedagogy training; specifically this research indicates that many are one of the following: recent college graduates, others with transitional career goals, and those who are retired are just a few examples that make up the majority of ISI educator population (2008). With the diversity that exists among this population, it is not safe to assume that all staff, volunteer or paid, have an expertise in science or pedagogy. In an effort to develop these skills, a few professional development (PD) programs have been created for informal science educators. These PD programs often include content relating to best practices in the fields of science education.

Existing research in the field of professional development for informal science educators suggest that these PD programs require extensive amount of time to show significant impacts. The work by Ash and Lombana showed significant impacts affecting the practice of informal science educators and their improvements in reflective practice (2010). A program evaluation from the Lawrence Hall of Science's COSIA Project showed that the student scientists who participated in a similar reflective practice PD program also exhibited change. These students focused on sharing their research with broader audiences also showed improvements to their abilities in communicating with non-scientific audiences (Halverson & Tran, 2010). However, in both studies, the amount of training is considerable. For example, in the case of Ash and Lombana, participants to attend 6 to 7 hour sessions of professional development for forty weeks.

In the case of the VolunTEEN program, the duration of training similar to the PD programs mentioned above are unrealistic. The VolunTEEN staff interacts with the same amount of visitors during their shifts as other interpretation staff. What if these youth volunteers received short training sessions that focused on learner-centered interactions throughout their time spent as a VolunTEEN? The outcomes of this study will help inform the field of informal science education on the effects of limited contact hours for a professional development or training program for volunteers.

Purpose of Study

A few years ago the full-time Education staff at the Aquarium participated in a PD program designed for educators teaching in informal science settings. Designed by the Lawrence Hall of Science (LHS), the curriculum aimed to help participants to become better reflective practitioners, as well as introduce methods of "best practices" based on existing body of research in the field of science education.

Management within the Education Department at the Aquarium expressed that they saw significant impacts made on the AOP staff as a result of the PD. The participants claimed that they saw evidence of changes in their practice, as well as staff sharing ideas and suggestions in regards to how they interact with various audiences at the Aquarium. These claims encouraged managers to extend this opportunity to part-time staff. In the summer of 2010, the Aquarium launched a modified version of the Reflecting on Practice program; part-time staff were invited to attend a 1-hour session every other week, and members of the full-time staff were trained to facilitate the training. However, the program had never been formally examined to measure its results.

The program was later adopted by the Volunteer Services Department in an effort to provide volunteers with introductions to best practices in informal science settings. The youth volunteers participating in the VolunTEENs program were chosen to receive this training because the training was easily integrated into their schedules. In addition, their time off of the floor did not significantly impact the Aquarium's normal operations. The purpose of this study aimed to examine what impacts, if any, did the training program provide for teen volunteer staff participating in the VoluTEEN program. In addition, this study also provided some documented evidence to help support the claims of those who have seen similar changes in interpretation staff as a result of their participation in earlier trainings.

Research Questions

The training program, which used current research to describe best practices in the field of informal science education, identified techniques associated with creating a learner-centered experience for guests who visit the Aquarium of the Pacific. By introducing these elements of best practices, this study aimed to examine the impacts of a training program provided for teen volunteer staff. The following research questions have been used to guide this study:

1. In what ways are teen volunteer staff able to identify best practices introduced in the learner-centered training?
2. How does the information presented in the training contribute to the changes in their practice?

By examining how this particular group of staff are able to identify the newly introduced training content, and how the content provided can inform or change their

current practice, Aquarium management staff can use this data to help determine if the time and costs associated with this training provides a valuable return. In addition, the this data will be used to determine if the short duration of the training can result in some changes as a result of staff's participation.

Methodology

Because the VolunTEEN session lasts only 8 weeks during the summer, in order to fulfill the 80 hour program requirement, these youth volunteers would come in twice a week for a 5-hour shift each day. The initial training was conducted during the first 2 weeks of the program. This training included information on animals, interpretive stations, as well as policies and procedures of the Aquarium. The remaining 6 weeks, the participants spent the majority of their shift on the floor in their role as interpretation staff. During their first shift (week three) on the floor the participants were asked to take the pre-training survey. The additional ongoing training would begin during week four of their participation in the VolunTEEN program. The training was held on the second day of their assigned week. The training would occur during the overlap of morning and afternoon shifts and would occupy either the beginning or the end of their shift, depending on their schedule. Figure 1 provides an outline of the training process and survey distribution and data analysis. Two training types were offered: One included the learner-centered training under investigation and the other focused on marine science and animals. The specific content will be elaborated on in Chapter 3 and can be found in Appendix A. The learner centered trainings occurred on Mondays and Wednesdays and the Animal focus training occurred on Thursdays.

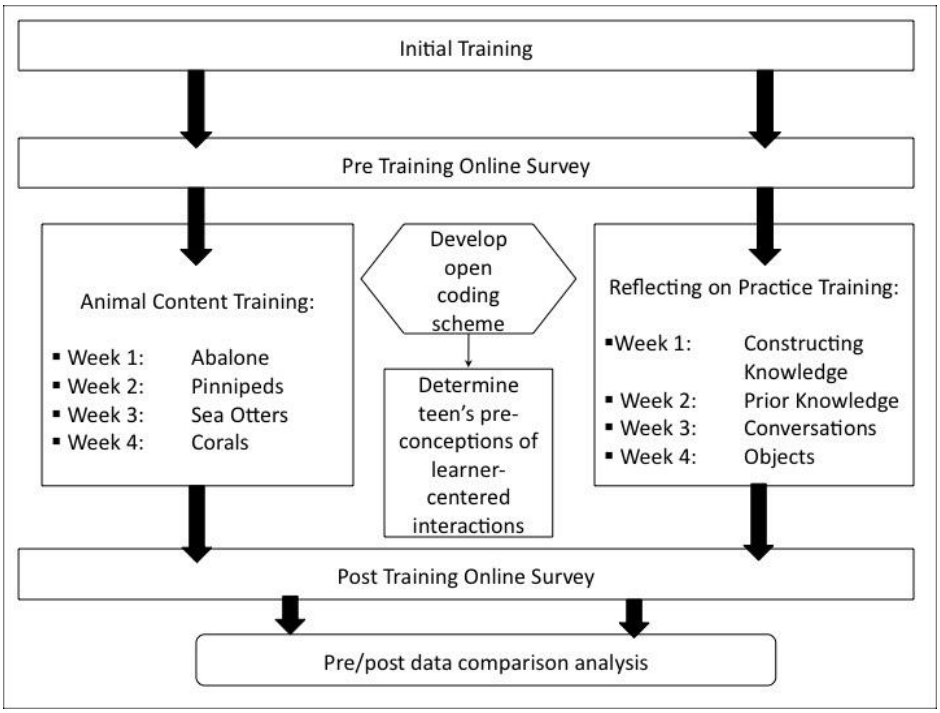

FIGURE 1. Diagram of methodology.

VolunTEENs who provided consent to participate in the research study completed two online surveys. The first survey was administered prior to the beginning of the learner-centered training and the second survey was provided after the training sessions were complete. Each survey was completed at the AOP during part of their volunteer shift. Both pre and post training surveys included a video of an interaction between an adult volunteer and two children visitors at the otter exhibit. As a part of the survey, the participants were asked to comment on their observations of good practices seen in the

video. The pre- and post-survey were completed at the Aquarium as a part of their volunteer shift.

The researcher wanted to determine what types of pre-conceptions surrounding best practices the learner already had or had gained from the initial training. By using a grounded theory approach, the data gathered from the pre-training survey responses allowed the researcher to gain an understanding of what these youth volunteers consider to be best practices (Saldana, 2009). This helped to establish some of the non-learner-centered elements of practice, which were later used for data analysis.

Once the learner-centered training was complete, participants were asked to take the post-training survey. The data was analyzed to see if there were any increases in the number of participant's responses that included elements of learner-centered practices that had been introduced in the training. The data was also examined to determine what non-learner centered elements remained despite their participation in the training. Individual participants' responses were also compared to show changes in individuals' changes in regards to best practices. Lastly, the control group responses were analyzed.

Rationale

The results of this study will help inform the AOP about what aspects of the learner-centered training the interpretation volunteers staff are able to internalize and possibly apply to their practice. This study will also help to gain a sense of what existing perceptions surrounding elements of practice youth volunteers are brining with them. Since the Aquarium has already invested its resources in conducting similar trainings with their part-time staff. This study begins to examine, what benefits justify costs associated with the program.

As mentioned in the beginning of the chapter, existing research regarding professional development programs seems to require a heavy time investment to show changes in practice. This particular training program was very short, and more aligned with the resources available to the program. Seeking information on increases in youth volunteers' abilities to identify and implement good practice might provide information useful to Aquarium administrators.

Research on volunteers in informal learning environments is limited; even less is known about youth volunteers and their perceptions of their own practice. Learning more about what volunteers' view as best practices as it relates to their role as on the floor interpreters, will inform the field of informal science education on how to promote learner-centered interactions with interpretation staff in similar institutions. There is much potential for examining youth volunteers, as there outcomes may be different than other staff since many are simultaneously receiving formal education at the same time they are learning from their informal educational experience as a volunteer.

Since docents in the United States are usually volunteers or part-time employees, professional development or ongoing training is often limited. In the case of our VolunTEENs, the limited time that they participate in the program restricts the amount of training that they can receive. It can be challenging for institutions to justify investing time and resources into a short-term program. However, many of these teen volunteers often continue their involvement with the Aquarium by becoming adult education volunteers and that is why they are worth the investment.

CHAPTER 2

LITERATURE REVIEW

The Importance Informal Science Institutions (ISIs)

Learning can take place in settings other than the classroom. There is a growing body of evidence that suggests that informal science institutions (ISIs), such as museums, zoos and aquariums, can impact visitors' understanding of science (Bell, 2009). In ISIs, unlike classroom settings, what visitors learn and understand is guided largely by the decisions of the visitors themselves. Visitors are provided with the "free-choice" to interact with whatever, whoever, and however they want when these types of institutions. In fact, informal science institutions are often referred to as "free-choice learning environments" (Falk & Dierking, 2000). By offering interactive, informative exhibits or using digital media to convey scientific information, ISIs offer a number of ways to experience these unique environments that help to reach a diverse group of visitors (Bell, 2009).

These informal science institutions provide their visitors with a variety of resources to promote learning and allow visitors to engage in learning conversations, build on existing knowledge and construct a deeper understanding of science concepts (Ash, Lombana, & Alcala, 2012; Falk & Dierking, 2010; Nantional Research Council [NRC], 2009). For example, at the Aquarium, if a visitor wanted to learn about a sea star, they would have the opportunity to see one in an exhibit, touch one at a touch tank, read about one where signage is displayed, or ask our interpretation staff members about one.

The learner is now providing their own learning objectives, and it is the visitor who decide how and if they want to utilize any or all of these resources.

Interpretation staff should be conscious of the role that the guests play in their own learning, and help facilitate a learner-centered experience when engaging in conversations with Aquarium guests. With limited guidance provided by these "free-choice" settings, visitor's motivations play a large role in what learning happens within these contexts (Bell, 2009). However, during staff interactions the visitor's motivations can become intercepted by staff's own motivations. Staff usually interacts with visitors in a manner that resembles the way in which they have been taught in formal settings (Bevan & Xanthoudaki, 2008).

Research on ISI Staff

As mentioned in the previous chapter, and for the purpose of this study, "Interpretation staff" is defined as staff members whose role and responsibilities are to interact with, and facilitate learning experiences for the visitor. Some institutions refer to these employees as "interpreters," and indeed do what their title implies. They are the ones who can help to clarify, scaffold or further the visitor's understanding of science. They are called upon as the experts who have the answers and many have prior experiences (such as a science background), which lend themselves to that expectation. Evidence suggests that many of these floor staff come from a diverse background of education, professional training, skills, capacities and interests (Bevan & Xanthoudaki, 2008). Within this body of research, Bevan and Xanthoudaki 2008, also claim that museum staff commonly have less experience in pedagogy than they do in subject specific content; coming from an eclectic mix of backgrounds often including areas other

than science or education. In addition to a diverse background, floor staff within museums in other countries often consist of part-time employees who are students in an institution of higher education. In the United States, many of the floor staff are young and transitional, or retired (Bevan & Xanthoudaki, 2008).

With the limited pedagogical training, floor staff often resort to teaching in the ways in which they were taught. This is usually a more traditional educational approach such as museum staff possessing knowledge and then delivering to the visitor (Ash & Lombana, 2010; Bevan & Xanthoudaki, 2008). Being in a vastly different environment, where floor staff can easily observe these less traditional ways in which visitors build knowledge and construct understanding, may help to relinquish some of the didactic approaches that they may have experienced in the past (Bevan & Xanthoudaki, 2008).

Professional Development in Formal Settings

There is a large body of knowledge related to professional development (PD) in formal teaching settings, but limited research has been done on the PD of education staff in informal settings. There is currently no systematic standardization for PD for science educators. This section draws from the existing literature to help inform the study of best practices in PD programs designed for teachers in informal settings.

Nine out of 10 teachers in the United States participate in some form of professional learning and more than half claim that much of the PD is not useful to their practice (Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009). The same research study also indicated that there is a recommended duration for a PD program to see gains. The suggested time span is six to twelve month and ranges from 30-100 contact hours. In addition, the authors suggested that PD should focus on student

learning. By predicting what concepts students will have trouble with and identifying skills and concepts that students should know, teachers are better able to apply the concepts learned from the PD (Wei, et al., 2009).

Time seems to be a factor in the effectiveness of PD programs. There is an increasing body of evidence that suggests that "one shot" trainings and workshops do not make any significant impacts and that PD should be intensive, ongoing and connected to the participants' practice (Astor-Jack & Balcerzak, 2006; Horsley, 2010; Wei, et. al.). In addition to these recommendations, professional learning is thought to be effective when the program that is developed is linked to increasing learner achievement, and is social and active (Webster-Wright, 2009).

Professional Development Design

Professional Developers for math and science have drawn from the research of Horsley (2010), whose work indicated that PD design frameworks should include the following in the PD design: First, participants must commit to a shared vision and define goals, and determine the process for which the goals are to be carried out. Once goals are set, the next step is to analyze student learning and other data by determining achievement gaps for both students and teachers. It is also important to identify critical issues, such as gaining institutional support and acknowledging time constraints. These issues can impact the flow and execution of the PD being designed. Once these steps are complete, developers are ready to plan and execute the program. The final step is to evaluate results so that when it is time to repeat the program, appropriate modifications and revision can be made. Upon conclusion of these steps, evaluating results will help to determine how to best make improvements for the next cycle of PD (Horsley, 2010).

Professional Development in Informal Settings

As previously mentioned PD for informal educators is a fairly new field of study. Many of the strategies used to develop these programs were drawn from the literature surrounding PD in formal settings. However, PD programs for informal educators are slowly gaining stride. The Lawrence Hall of Science (LHS) in Berkeley California recently implemented a program called Communicating Ocean Science to Informal Audiences (COSIA), where ISIs and institutions of higher education (IHE) created a partnership to educate graduate and undergraduate students about pedagogy and learning theory (Phillips & St. John, 2010). Some of the results of the program evaluation on COSIA indicated that informal science educators were now more informed of how to better communicate with a broader public as a result of the training. In the same evaluation report, student participants described multiple benefits gained by participating in the program. Some participants mentioned that they have been able to gain skills to make them think about how to communicate with a general (non-scientific minded) audience. A product of the COSIA project is an adapted curriculum aimed to introduce informal science educators to the same learning theory and pedagogical strategies used in the original COSIA program. The product is called Reflecting on Practice (ROP) and is used as a model for the learner-centered training used in this study.

ROP is a strategy used for self-evaluation. Reflection is integrated in professional development programs and is necessary to exercise professional judgment (Day, 1999). In a study that focused on changes of the identities' of museum educators, Ash et al. explain that it is uncommon practice to allow museum educators to regularly reflect on their own practice (2012). The learner-centered training content used in this

study was adapted from the ROP PD curriculum, which was originally developed by the Lawrence Hall of Science in Berkeley, California. The goals of the program were to provide informal science educators with the tools to build a shared professional language, as well as to create habits of reflection in order to improve their practice, and lastly promote professional learning (LHS, 2011).

Research on museum educators and professional development suggests the need for professional development that incorporates a change in practice from more traditional and didactic approaches to teaching pedagogical theory based approaches. However, the existing programmatic resources used by the staff themselves are designed in the more traditional way and often have an institutional objective (Bevan & Xanthoudaki, 2008). Their recommendations suggest that professional development should highlight the following:

> Knowledge--by thinking of knowledge as a whole practice, or conceptual action and by reflecting on how knowledge emerges. Learning--designing activities that allows participation structures. Learners--designing activities that connect with everyday practices and providing opportunities for reflection and personalized meaning making. (Bevan & Xanthoudaki, 2008, p. 115)

A study done by Ash and Lombana (2010) on methodologies for reflective practice and museum educator research used a five phase research project that allowed museum educators to observe families and their scaffolding behaviors. By observing museum educators who had received long-term professional development that included their own reflection of scaffolding activity showed multiple outcomes. The outcomes indicated that participants' attention became focused on what learners where doing and

how they (visitors) interacted with their surroundings. The participants also took what learners were bringing with them to the museum (knowledge, experiences), and were more willing to participate in conversation with these visitors (Ash & Lombana 2010, pp. 19-20). By focusing on how families determine meaning and how museum educators construct the visitors' knowledge as well as how the staff uses this scaffolding skill in their practice "Noticing protocols" were developed to identify aspect of family dynamics used by museum educators. These protocols look for existing roles, issues of power, types of dialogue, who initiates it, verbal and non-verbal cues, and issues of culture" (Ash & Lombana, 2010, p. 20).

The Use of Video Reflection

Video has been used in a number of PD programs for informal science educators. The ROP PD curriculum (LHS, 2011) used video footage of the participants as a way of self-reflection. This curriculum was then adapted and used to develop the training used in this study. Self-reflection using video has also been used to in the PD program analyzed by Ash, Lombana and Alcala for example one participant stated "Your are free to reflect and go back and watch specific segments over and over again and you notice more and more every time" (Ash, Lombana & Alcala, 2012 p. 24).

For the purpose of this study the participants viewed video of an adult volunteer interacting with young visitors. Video reflection will be used in both pre- and post-training surveys and allows the participants to review an interaction that is similar to the interactions that the teen volunteers have with visitors on the Aquarium floor.

There are a fair amount of advantages to using video, since they can be replayed so attention can be concentrated on different areas with each view (Janik & Seidel, 2009;

Goldman, Erikson, Lemke, & Derry, 2007). The teen volunteers will be allowed to replay the video as many times as needed. They will also be able to pause and rewind in order to minimize the chance of overlooking any key parts of the interaction. Finding a video to use for the pre- and post-training surveys was determined by using a guideline from *Video Research in the Learning Sciences* (Goldman et al., 2007), which suggest that there are advantages and disadvantages in using video for data analysis, and weighing these pros and cons should help determine if video should be used as a tool. There two problems that may arise when using video, the first is capturing good quality data. The second challenge is that it might be overwhelming since there are so many layers of interaction. In addition to dialogue, there are a number of non-verbal cues such as poster and gestures, and emotional expressions that are included video (Goldman, et al. 2007).

Youth Volunteers

The participants in this study were between the ages of 14-16 and had written an essay on why they wanted to participate in the VolunTEEN program that has been included in their application. Among their responses, many of the teens expressed having an interest in learning more about marine life, wanting to use this as an opportunity as a starting point in developing their future careers, or just enjoy spending time at the Aquarium. Many of them express that they have been coming to the Aquarium since they were very young. These reasons are similar to motivations seen among many other volunteer opportunities. In a study done on motivations for youth volunteer participation, Luping claims that motivations for volunteer participation may consist of three categories: focus on responsibility, focus on development, or focus on pleasure (2011). This study also claims that these motivations can change as a result of their participation

(Luping, 2011). It is clear however, that volunteers often choose to become volunteers because someone has requested them to participate and with the enactment of Serve America Act of 2009, volunteering has been on the rise (Nesbit & Brudney, 2010). Service-learning programs have been established within schools and often require students to participate in volunteer programs in their area. Many high school students seek out opportunities like the VolunTEEN program. The Aquarium of the Pacific has a service learning program, where student can sign up and receive volunteer hours with minimal training. The volunTEEN program in comparison requires a much larger investment of time and willingness to learn, which suggests that those who participate in this program are not just there to receive the service hours.

Creating a Learner-Centered Experience

ISIs by their very nature lend themselves to creating learner-centered experience. The interaction between the visitor and the volunteer can alter the amount of learner-centeredness. Depending upon the interaction, the interpretation staff can influence the interaction and it has the potential to be less learner-centered, and more staff centered. Recognizing the importance of the learner-centered experience can help promote these behaviors. The self-determination theory first described by Deci and Ryan in 1985 (as cited in Randler, Kummer, and Wilhelm, 2011), suggests that, "content is retained better if the teaching is more learner-centered"(p. 385), Furthermore, "active and self-directed learning leads to self-generated knowledge which should persist longer than knowledge acquired by the teacher-centered lecture style" (p. 385). In a study conducted by Randler, et al., (2011), taking advantage of the learner-centered nature of ISIs can aid in the instructional learning within a formal setting. To create a learner-centered experience in

a free-choice setting, the following elements were introduced: *prior knowledge, building and maintaining interest, conversations, and objects.*

Prior Knowledge

Learning stems from building knowledge and constructing understanding; when learning takes place, people attempt to make sense of the world. When new knowledge is introduced, it is often connected to what that person already knows. People's perspective is dependent on how they build on their prior knowledge (Alexander, 1996). ISI staff can play an important role in promoting learning, especially if the staff builds on the visitor's prior knowledge. ISIs are places where people often have the opportunity to experience new things. These new experiences often result in newly acquired knowledge. It is important for staff to utilize strategies to help visitors access their prior knowledge, as accessing this prior knowledge can help the visitor fit the newly acquired knowledge into their existing framework.

While learning is also a social endeavor where conversations and actions construct meaning and adds to their conceptual framework, staff can also play a role in visitors' learning through conversations (Brandsford, 2000). In some cases research involving analyzing family conversations at ISIs often exhibit dialog that reference connections between their shared prior knowledge and the new things they are learning during their visit (Mann, 2009). ISIs are often aware of the strong role that prior knowledge plays in visitor's learning, often providing examples that connect science content to normal day to day activities (Bell, 2009; Falk & Dierking, 2000). Cultural knowledge helps to shape the identities of those who attend ISIs by providing insights to the visitors' own interests and curiosities (Csikszentmihalyi & Hermanson, 1995; Falk et

al., 2008). One strategy that seems to work well in informal learning environments, is to illustrate the contrast of one's prior knowledge to scientific phenomena, by providing surprising information that learner must reflect on (Mann, 2009).

Conversations

Conversation plays a large part in people's learning since talking is an external expression that helps to organize their thoughts and create an idea (Collins, 2006; Sawyer, 2006). A study done looking at didactic discourse in a museum suggests, "Meaningful learning involves making connections between the ways of thinking and talking… between everyday scientific views" (Scott, Mortimer, & Agular, 2006, p. 622). Learning is an active process in which engaging and manipulating objects, experiences, and conversation help learners to construct an understanding of the world (Dewey, 1938; Piaget, 1964; Vygotsky, 1986). The activities that people encounter everyday fit into a conceptual framework that they carry with them as they learn new things (Bransford, 2000).

During the learner-centered training used in this investigation, three different patterns of talk were introduced: (1) Educator Monologue, which is described as a lecture style of discourse, where the expert is doing almost all the talking; (2) Initiate Respond Evaluate/Initiate Respond Follow-up (IRE/ IRF), which is described as a way to extend on student's answer, draw from it and makes connections to what they said; and (3) Reflective Discourse, which provides the student with the opportunity to express their own thoughts by using questions which encourages the student to think about their ideas and uses wait time (LHS, 2011).

Objects

In free-choice learning environments, the learner has the opportunity to interact and engage with a number of different objects that can contribute to one's learning. For example in a study done by Ash, families were able to use a frog skeleton to compare it to live swimming frogs in order to create an understanding of how frogs metamorphose from tadpoles into adults (2003). In the ROP curriculum five types of objects are introduced: "Natural objects, for example: living and preserved animals and plants," "Representational objects such as models or replicas," "Virtual/ Digital objects like video or photographs," "Artifactual objects including, human made objects with some sort of cultural or social significance," and lastly, "Interactive object"--objects that can be manipulated (LHS, 2011). Some objects can aid in different learning objectives; for example in a study done by (Eberbach & Crowley, 2005), they learned that when using natural and virtual objects, learners make more connections to everyday life.

CHAPTER 3

METHODOLOGY

Introduction

This study explored how teen volunteers (ages 14-16) at the Aquarium of the Pacific applied new ideas introduced in a one–hour, weekly interpretation training program. This training introduced the importance of creating a learner-centered environment, with emphasis on: prior knowledge, constructing knowledge, learner conversations and the use of objects. A mixed-methods approach, using pre- and post-training surveys with open-ended questions related to a pre-recorded video of a staff-visitor encounter were used to examine how teen volunteers' perceptions of best practices changed after receiving this training. This study also included a small comparison group that received a different type of training focused on additional content pertaining to exhibitry and marine science concepts. In an effort to document these changes in volunteers' practices the following research question was used to guide this study:

How does participation in a training program, designed to introduce the importance of creating a learner-centered experience for aquarium guests, impact teen volunteer staff at the Aquarium of the Pacific?

More specifically, the investigation examined two related questions:

1. In what ways are teen volunteer staff able to identify effective practices introduced in the trainings?

2. How does the information presented in the training sessions affect changes in their practice?

The Setting

This study took place at the Aquarium of the Pacific located in Long Beach, California. This public aquarium is the nation's fourth highest attended, not-for-profit aquarium. Serving nearly 1.5 million annual visitors, the Aquarium of the Pacific is also credited with serving the most ethnically diverse audience of any major aquarium in the country.

The participants of this study consisted of teens between the ages of 14-16 years old who applied to and were accepted for a summer-long volunteer program call VolunTEENs. The program requires a minimum of an eighty-hour service commitment from teens. Their roles and responsibilities included interacting with guests at a variety of exhibits, touchpools, and learning stations. Trainings for the teens were held from 1:00p.m. to 2:00p.m. in classroom spaces at the Aquarium. This time frame allowed both morning and afternoon volunteers to attend.

The Training

All teen volunteers received the same 16-hour initial training. This training was designed to prepare them for their roles and responsibilities when interacting with guests on the Aquarium floor. This initial instruction provided basic information about animals and exhibits. It also included policy and procedures related to the Aquarium, and allowed for opportunities to role-play using objects from the interpretive stations they were assigned to before they went out on the floor.

After the initial training, the teens were scheduled for two 5-hour shifts each week, where they were assigned to specific interpretive stations and exhibits throughout the Aquarium, with rotations every half-hour. Their shift assignments were arranged so that one of the two shifts per week included a 1-hour training session. Depending on their shift assignment, they either received the learner-centered training (the treatment) or received the training where supplemental information related to animals and exhibits was provided (the control).

The topics introduced in the learner-centered training sessions were originally derived from a professional development program designed for informal science educators that focuses on self-reflection in these informal settings. This Reflecting on Practice program, developed by the Lawrence Hall of Science (LHS, 2011) consisted of the following four modules:

1. Learning, Reflection and Science: Discusses how people learn, the importance on self-reflection as means for professional development and the processes of science.
2. Constructing Knowledge: Introduces scaffolding and how teachers scaffold student's learning, and how it relates to prior knowledge.
3. Learning conversations: Focuses on different types of conversations and how these different types encourage learning.
4. Objects in Teaching: Introduces types of models and how they contribute to visitors' understanding.

Due to the limiting 80-hour program commitment, only particular elements of the ROP program were presented in the weekly training sessions. A detailed outline of the

trainings can be found in Appendix A; those receiving the learner-centered training were introduced to the following topics:

1. How people learn and constructing knowledge: Discusses how people learn, how learning can be social, how others help construct the knowledge of others
2. The role of prior knowledge: How prior knowledge contributes to learning and ways to assess or access it.
3. Conversations and discourse structure: How different styles of discourse can contribute to learning in different ways.
4. Objects: Introduces types of objects and the advantages and disadvantages that they have in learning environments.

Volunteers who participated in the VolunTEEN program would occasionally receive additional content that consisted of additional information on topics related to the exhibits and stations that they worked with. An outline of this training can be found in Appendix B and consist of the following:

1. Abalone: learning how to identify different species, and how the Aquarium is involved in a breeding program to help the endangered white abalone.
2. Pinnipeds: looking at seal and sea lion behaviors and learning what they mean and making observations using ethograms.
3. Sea Otters: discussing adaptations and behaviors in their natural habitats. Learning about this species and its role as a keystone species.
4. Coral: looking at the physiology of a coral and the symbiotic relationships that it forms with other members of the coral reef ecosystem.

Participants

Of the 63 who were accepted into the VolunTEEN program approximately 42 participated in the learner-centered training, while 21 participated in the training that focused on animal content and served as the comparison group. All participants received the initial training, and those who agreed to be participants of the study took the survey. Then based on their schedule, teens were provided with either the learner-centered training or the animal content training.

Data Collection

Data collection involved a pre-survey and a post-survey using a web-based survey tool. Each survey was completed during their volunteer shifts while at the Aquarium. The survey was designed by the researcher and used a mix of open-ended and short answer questions. The same pre- and post-surveys were given to those who received the animal content training and those who participated in the learner-centered training. The survey also included a video. Video reflection as was an essential part of the original Reflecting on Practice professional development program curriculum. However, it was decided that teen volunteers who are new to this role might not be comfortable with being videotaped and would also be a threat to the anonymity of the study. It was decided that they would be able to watch an interaction of an adult volunteer and that for the purposes of the study that the video would be shown as a part of the survey rather than a part of the training.

The video showed an interaction between a volunteer and two young visitors. This particular video was selected because it was a pre-existing video that had been previously used for self-reflection purposes. Rather than creating a new or scripted video,

the researcher decided that using an authentic example of a volunteer and visitor interaction would allow the participants to identify with the volunteer in the video, creating more genuine responses. The questions that referred to the video were created to provide the researcher with an idea of what these volunteers consider to be "best practices." By having them reflect on their ideas of the good and bad things they saw the volunteer in the video doing, it was possible to document how their ideas changed.

Another group of teen volunteers were used as a pilot study. An original concern the researcher was possibility of survey fatigue. There were a number of open-ended responses, but the students who took the pilot survey were able to describe their answered with enough detail that the open-ended question type was not modified for the actual study. The pilot study also helped to determine how much time should be allotted to complete the survey.

Survey Development

An online survey was used to collect the data to ensure the security of the data, as well as to preserve the anonymity of the participants. The online survey tool that was used to develop the survey also made it easy to embed video data into the survey so that the participants were able to access the video from the survey itself. The participants were asked to provide their thoughts surrounding what made the interaction a good one, what did they see in the video that resembles what they do, and if there was anything that they would have done differently. The same video was used for every survey to ensure reliability of the data. In addition to the open-ended questions, there were a few questions that included radio buttons and short answer fill in the blank to provide some variety (see Appendix C & D for complete survey questions).

The questions used in the survey aimed to capture the participants' ideas of what makes a good interaction (that is, their ideas of best practices.) The researcher also wanted to identify if they have some awareness of a learner-centered approach prior to the training, and also how these ideas changed after their training.

In addition to the participants' ideas surrounding best practices, the researcher also wanted to gain a sense of how the training affected their ability to identify and apply the approaches introduced in the learner-centered training. Many of the questions in both pre- and post-training surveys aim to get a sense of how they perceive the interaction seen in the video.

Before Training

Once consent had been obtained (See Appendices E & F to review consent forms), participants were asked to take a pre-training survey. The pre-training survey was noted on their daily schedule and indicated when and where the surveys were to take place. Finding the time to conduct the surveys without impacting their regular schedule was initially a challenge. It was determined that surveys could be administered during the participants "project time." Project time occurred each shift for a half-hour where VolunTEENs were tasked completing their project books. Project books are booklets that are used to provide VolunTEENs with the opportunity to learn more about animals or marine science topics. These project books provided prompts to help them write information on the animals or topics of their choosing. On the days that the surveys were being held, those who participated in the study took the pre-training survey and those who did not were asked to work on their project books.

Instructions on how to access the online survey were provided to study participants. They were verbally notified as well as reminded in print during the survey that they could watch the video as many times as needed. During the pre-treatment questionnaire, the participants accessed a pre-recorded video of an adult staff member engaging with Aquarium visitors at the sea otter exhibit as part of the survey. At that time, they were instructed to listen and watch the video with the use of computer monitor and headphones. They were then prompted to answer survey questions based on what they saw in the video. This included questions asking about their views of best practices that they saw in the video. If they had any trouble with the survey or the video, they were instructed to notify VolunTEEN mentor staff. The mentor staff met with the researcher and were briefed on how to troubleshoot possible problems with the online survey or the video. The participants had up to one hour to complete the questionnaire. However based on a pilot survey, most teen volunteers were able to complete it in less than thirty minutes.

Comment [RB1]: Include info about the survey and make sure to talk about the video

Each survey participant was asked to provide an identification number so as to preserve anonymity. The teens had a moment to think of some form of numbers. They were asked to not share with the researcher which of the provided examples they chose to use. The teens were asked to describe what were good examples of interactions that they saw in the video, they also had the opportunity to indicate if there was anything that they would have done differently. The post-training survey asked questions directly about what key points they took away from the trainings, and what, if anything about their practice has change as a result of the training.

Data Analysis

Due to lack of existing research on what youth volunteers consider to be best practice, a grounded theory approach was used to identify participants' initial ideas surrounding best practice. By inductively examining the participants' responses, the researcher was able to identify their initial ideas. By using an open-coding method, these ideas were then categorized and defined for the purposes of study (Fitzpatrick, Sanders, & Worthen, 2004).

To gain a sense of how individuals changed their ability to identify the elements that were introduced in the training and any changes in their practices, individuals' pre- and post-treatment surveys were compared, and changes were analyzed qualitatively and quantitatively. Some survey questions focused on their ability to identify the elements introduced and some questions were aimed specifically to determine if there were any changes in practice. The participants who completed both pre- and post- surveys were used to analyze this data to see if there were any changes to the groups' practices as a whole.

CHAPTER 4

RESULTS

Introduction

This chapter will highlight some of results and impacts of the learner-centered training the youth volunteers received. The first step consisted of data analysis of the pre-training surveys. Prior to their participation in the learner-centered training, these surveys where used to gain a sense what the youth volunteer initially identified as "best practices." The responses were then categorized into two main categories, those that relate to the learner-centered training that they were about to receive, and those that did not. The two sets of response types were broken down into even more specific subsets and used to establish the coding scheme that was developed for this data analysis.

The researcher also looked for two types of changes, one being a change in their ability to identify learner-centered practices, and the other, to see if the youth volunteers were able to make changes in their own practice as a result of the training. By using both sets of codes, the research was also able to see what pre-conceptions the youth volunteer held onto, despite participating in the training.

As mentioned in the previous chapter, the participants had sixteen hours of initial training prior to the volunteers being placed on the Aquarium floor. This initial training was designed to provide basic information on the animals and stations where these volunteers would later be assigned. Once the initial training was completed and the teens where placed on the Aquarium floor, the youth volunteers were asked to respond to the

online pre-training survey during one of their first shifts. After all the surveys were completed, the following week the volunteers participated in weekly training sessions during their volunteer shift. Two types of trainings were offered, and the participants either received training related to learner-centered pedagogy or one that related to animal and marine science content. After competing five weeks of one-hour trainings, all participants were asked to take a post-training survey. Both pre- and post-training included a video of an adult volunteer interacting with young guests in front of the sea otter exhibit. The participants were asked to provide comments that pertained to the interaction they saw in the video as well as their own perceptions of best practices.

Participants

Of the 63 who were accepted into the program, a total of 17 participants provided consent forms in time to participate in this study. Based on student availability thirteen participants were assigned to shifts that included the learner-centered training and 4 participants were scheduled for shifts that included the animal content training. Each participant of the study took the pre-training survey. However, when it came time to take the post-training survey, one participant fell ill and was sent home early. This resulted in a total of 16 participants who took the post-training surveys. Of these 16 participants, two were unable to remember their self-assigned identification numbers; meaning pre- and post-program surveys could not be matched and therefore were not individually compared. The four participants who participated in the animal content training were therefore simply used as a small comparison group.

Elements of Best Practices

The elements used for the coding scheme were obtained in two different ways. One section of the coding scheme was determined by using a grounded-theory approach. The researcher analyzed the participants pre-treatment survey responses that were obtained prior to the start of the ongoing training sessions. This approach was used to determine specific elements that did not related to the learner centered training, but were considered by the participants as their perceptions of best practices. Since theses elements do consist of behaviors that encourage interactions between guests and volunteers. This approach did provide a baseline for the researcher, since very little is known regarding volunteer thoughts on best practices. It is necessary to recognize that these elements are not necessarily regarded as the "best practices" supported by related literature, yet these elements are essential components of these types of interactions. In an effort to distinguish these elements derived from the youth volunteers, they were labeled "Elements of Best Practices Unrelated to the Learner-Centered Training." The other category was based on the specific topics that were to be introduced in the learner-centered training and are supported by the existing literature. These elements were labeled "Elements of Best Practices Related to the Learner-Centered Training." Both categories of the coding scheme will be explained in further detail later in the chapter.

The pre- and post-training surveys consisted of several questions that related to the video, which contained an adult volunteer interacting with young Aquarium visitors. The questions provided the participants with the opportunity to describe what they considered to be "best practices" by reviewing both what they saw in the video as well as

describe how they interact with Aquarium guests. The participants reflected on the video by answering the following questions:

1. Describe at least three things that you saw in the video that made this a good visitor/volunteer interaction. Why? (Present in both pre- and post-surveys)

2. Are there any examples of things you saw the volunteer do or say in the video that you do/say when out on the floor? (Present in both pre- and post-surveys)

3. Think back to each training session that you participated in, list the key points or other information that you took away or learned for each? (Present in post-survey only)

4. Have the training session impacted what you do on the floor? If so, what has changed? (Present in post- survey only)

Each question provided an opportunity for the participant to input an open-ended response. Questions 1, 2, and 3 were used to gauge the participants' ability to identify good practice. Question 4 was used to investigate changes in the participants' practices. Questions 3 and 4 were also used to help determine the treatment from the control group. Since the participants who participated in the control group would describe the animal content and related facts they learned from the training. Questions 1 and 2 were asked in both pre- and post-training surveys, and used to determine the section of the coding scheme that included the elements not related to the learner centered training. Table 1. Illustrates the coding analysis used to guide these different codes.

TABLE 1. Elements of Best Practices Not Specific to the Learner-Centered Training

Code Label	Definition	Examples of Teen Responses
Volunteer Actions	physical behaviors and actions that represented any reference to movements that the volunteer would do in order to make guests feel more comfortable.	"Got down to their level," made eye contact," "Made them feel more comfortable,"
Positive Demeanor	Any reference to attitude or expression of volunteer during the interaction.	"Volunteer was enthusiastic," "Volunteer was happy and excited,"
Positive Reinforcement	Any reference to encouraging or supportive dialogue given by volunteer to the learner.	"Told them good job," and "Made them feel smart,"
Content Detail	Any reference to content delivery of facts or information pertaining to the subject in discussion	"Describe specifics about the animals," "Making sure they have the correct answers,"
Questioning as a means to Deliver Content	Any reference to a questioning that encourages visitor participation in conversation that is guided by volunteer talking points, with the assumption that volunteer is trying to get to a learning objective ("the correct answer").	"Ask them questions they would have to answer," "Asking questions helps them think about the answer,"
Hinting	Any reference to volunteer helping learner reach the intended answer.	"The volunteer led the kids in the right direction when they weren't sure what sea otters ate, she gave them hints."
Station Management	Any reference to proper interaction and maintenance with objects, exhibits, or touch animals	"Only use two fingers," "Use the back of you're hands to touch the fur,"

Note: The elements that were used to guide the coding scheme were selected based on the key points taken from the training and are included in Table 2.

TABLE 2. Elements of Best Practice as Related to the Learner-Centered Training

Code Label	Definition of Element	Example of volunteer response
Prior Knowledge	Any reference of volunteer engaging in discourse that: 1. Provides the volunteer with a better understanding of guests' prior experiences, including misconceptions or 2. Provides the volunteer with a better assessment of the guests understanding.	"Listening and talking to others about groups past experiences," "correcting misconceptions," "Connecting with guests"
Questioning (as a means of gathering prior knowledge)	Any reference to using questions to get at the guest's prior knowledge.	"I asked them questions to see what they know"
Encouraging social interactions	Any reference to the role of creating a social environment and how social interactions can support learning.	"The volunteer provides opportunities to have visitors talk to each other."
Keeping interest or interest building	Any reference to modifications made to interaction in order to keep learners interested or engaged. Any reference to visitor interest or how it guides the interaction.	This could refer to any attempts to "use objects keep them engaged" or create "[Using] flexible talking points visitor guides the conversation"
Conversations (discourse structure)	Any reference to creating a more learner centered conversation discussion on structure of discourse. Or identifies qualities of using one style over another	Uses new terms introduced in the training i.e. "IRE/IRF," "monologue," or "reflective discourse."
Promoting a deeper understanding	Any reference to constructing knowledge or building a deeper understanding of a familiar concept	"She took what the guests were telling her and built on to their (learner's) current knowledge."

Objects	Any reference describing the use of object as a way to enhance the visitors experience or engage the visitor. Identifies pros/cons of certain models, or find opportunities to use as learning tools.	"Touching fur helps to associate with the actual exhibit," or "Using the correct object to help explain what the volunteer is talking about."

The teens' responses indicated that there was a noticeable shift in the participants' ideas of best practice from pre- to post-training. The first three open-ended questions, previously stated in this chapter, were used to measure the participants' ability to identify the elements of best practices that had been introduced in the learner-centered training. Each teen's responses to these three questions were examined together in order to find out what elements they were able to identify. Upon examination, some teens mentioned the same elements of practices when responding to different questions, however it was only noted once for that respondent. This was used to determine what elements each participant was able to identify.

TABLE 3. Learner-Centered Training Participants' Ability to Identify Best Practices (N = 12)

Learner Centered Elements of Best Practice	Pre-Training Survey Results	Post-Training Survey Results
Questioning as a means to elicit prior knowledge	15%	25%
Prior Knowledge	15%	58%
Encouraging Social Interactions	8%	0%
Keeping/Building Interest	8%	25%
Building Knowledge/ Deeper Understanding	0%	25%
Conversations/ Discourse Structure	31%	50%
Objects	23%	75%

The results suggest a slight increase in the number of participants who mentioned elements related to the training in the post-training survey when compared to the pre-training. Prior knowledge and Objects were the two elements that saw these slight increases. In the pre-training survey, 15% of participants identified prior knowledge as an element of best practice, indicating that a few of the participants had some prior understanding of the role prior knowledge plays in learning, but that increased to 58% after receiving the training. Twenty-three percent of participants were able to identify the importance of objects prior to training, this also increased after training, jumping to 75% of participants who were able to identify the use of objects in their practice.

In addition to reviewing the responses as they relate to the learner-centered training, the elements of best practices that were generated from the teens' responses, which did not relate to the training, were also compared. The researcher wanted to see if the slight increase in the participants' ability to identify learner-centered interpretation would also result in a decrease in identifying elements of practice not related to the training. The results suggest that there is little shift in participants' views of identifying their original ideas related to good practices. One noticeable result was that *questioning as a means of content delivery* did drop; which suggested that some participants did recognize that this particular element might not be the best way to interact with visitors. However *providing hints* actually increased after the learner-centered training was completed. Table 4 describes the outcomes of pre- and post-training surveys responses related to elements not specific to the learner-centered training.

TABLE 4. Identification of Best Practice Unrelated to the Learner-Centered Training

Elements of Best Practice Elements Unrelated to the Learner-Centered Training	Pre-Training Survey Results	Post-Training Survey Results
Volunteer Actions	38%	33%
Positive Demeanor	15%	17%
Positive Reinforcement	46%	33%
Content Detail	15%	17%
Providing Hints	15%	33%
Station Management	15%	17%
Questioning as a Means of Content Delivery	23%	8%

Individual Change Related to Identifying Best Practices

In order to gain a sense of the amount of change in each individual's ability to identify elements of best practice introduced in the learner-centered training, the number of elements mentioned were tabulated from both pre- and post- surveys and means were calculated. Table 5. includes the average number of good practices related to learner-centered training for each individual.

TABLE 5. Average Number of Elements Presented in Individual's Pre and Post Responses

Elements of Best Practice	Pre-Training $\bar{x}$ (n = 10)	Post Training $\bar{x}$ (n=10)
Related to Learner-Centered Training	1.1	2.5
Non-Training Related	1.9	1.7

Based on this analysis, it was evident that some of the teens already had varying levels of awareness of certain learner-centered elements prior to receiving the training. Almost all individuals mentioned at least one element within their pre-training survey

responses. After the training those who participated in the learner-centered training showed a slight increase in the average number elements each individual mentioned. The results suggest that there is no shift in participants' identification of strategies related to their original ideas of best practices.

To better illustrate individual change in identifying learner-centered interpretation elements, the results reflected in the following section are taken from individual responses. Pseudonyms have been assigned to the individuals by the researcher to preserve their anonymity. The following qualitative analysis demonstrates what types of change were evident in the responses gathered from the pre- and post-training surveys. For example, in the pre-treatment response, Sara mentioned good practices that were not covered in the training such as: "bent down to guests," and "guests were younger so she used a softer voice." In the post-training responses, she was able to identify a number of subjects introduced from the training, with examples such as "The volunteer took what the guests were telling her and added on to their current knowledge," and "Make sure the conversation isn't one way. Both people should be talking," and "try to use guests' past experiences to help them learn but not a hindrance." Based on her responses, Sara was able to identify a few elements that related to the training she received, including prior knowledge and conversation discourse structure.

Austen also showed an increase in the number of learner-centered approaches that were identified in the video. In his pre/post responses, Austen mentioned volunteer actions consistent with the teen-generated best practices, such as, "she (the volunteer) kneels down to make eye contact" and "She also gives hints to have the visitors continue until they get it right." However, he also mentions "She (the volunteer) also makes it into

more of a conversation then her talking and giving a list of facts." This last response is a learner-centered approach that relates to conversations and discourse structure. In the post-survey he mentions a similar response by stating, "She (the volunteer) also keeps it a conversation and not as a monologue where they bore the person to death." An additional element mentioned in the post-training survey that related to the learner-centered training was objects. Austen stated, "The best learning experience comes from the best models and visual aids that all have advantages and disadvantages."

There was one participant who exhibited a higher rate of learner-centered elements in pre, then for some reason did not articulate very much learner-centered elements in the post-treatment survey. When asked to name three things she saw in the video that made it a good volunteer-visitor interaction, Kamilla mentioned "encouraging them to tell her things that they know," and "asking them questions about how they got their knowledge." Yet, during the post treatment responses for that same question, she listed "Asking questions, Guest's Prior Knowledge, Model." She may be referring to elements of the learner-centered training however; based on the responses provided, it was difficult to determine the degree of Kamilla's understanding. Providing the terminology might suggest that Kamilla did not feel the need to elaborate, as it was now generally understood terminology. As previously mentioned her response of "asking questions," could not qualify as a learner-centered element because how or for what reasons the questions she is referring to were being asked was not clear. The issue of depth related to responses will be discussed further in the next part of this chapter.

Several participants showed patterns where the number of learner-centered elements present in their pre- and post-training survey responses were the same. These

participants began with a pre-existing awareness of related elements mentioned in the training they received. For example, Nico stated the following in the pre-training survey, "the volunteer let the kids tell her the facts about the otters, she didn't lecture them" and also mentioned something similar in post, "she just didn't tell them facts, she listened to what they said and talked about what they mentioned". In pre and post survey she mentioned the same form good practices unrelated to the training; providing hints seemed to be an element found in both pre and post responses. For example, "the volunteer led the kids in the right direction when they weren't sure about what the sea otter ate. She gave them hints." "She didn't openly deny them when their facts were wrong, instead of saying 'no'… she gave them hints of what lead them in the right direction."

Not all participants exhibited a change in their ability to recognize good practice based on the training. One participant showed a low amount of related elements among his responses and maintained a low occurrence of elements from the training in his post treatment responses. Of the non- learner-centered elements Volunteer Actions, stayed relatively the same. Positive Reinforcement did show a small decrease from pre- to post-training responses. It is also worth mentioning that there was a slight increase in Providing Hints.

Overall, certain elements related to the learner –centered training seemed to make larger impacts on the participants. Two elements seemed to become easier to identify for the teens who participated in the learner-centered training. Table 6 highlights the larger shifts in responses from pre- to post-training survey responses and indicates that there were measurable increases in the mentions of both Prior Knowledge as well as References to Objects.

TABLE 6. Notable Changes From Pre- to Post-Training Survey Responses

Training Type	Pre-training	Post- training
Learner-Centered Training Element	References to Prior Knowledge- 15%	References to Prior Knowledge- 58%
	References to Objects - 23%	References to Objects - 75%
Non- Learner-Centered Training Elements	Volunteer Actions- 38%	Volunteer Actions- 33%
	Positive Reinforcement- 46%	Positive Reinforcement- 33%
	Providing Hints- 15%	Providing Hints- 33%

Changes Applied to Practice

In order to gain a sense of individual's changes in their practice, responses gathered from the following question was used to determine how the training impacted their own actions on the Aquarium floor: *Have the training session impacted what you do on the floor? If so, what has changed?* Of these those who participated in the learner-centered training and completed the post survey (n = 12), responses from half, indicated a change in practice occurred which related to how they communicate to guests. One volunteer stated: "I'll try to have a conversation with guests, not just list facts." And another teen also claimed:

> "In the beginning of the VolunTEEN program, if a guest asked me a questions I would quickly answer and go back to my streamlined monologue. After my

training session I learned to ask more questions, and embrace the questions that the visitors ask and use them to fuel a conversation and add other facts."

The data suggests that the participants' were able to identify Prior Knowledge and the use of Objects more often than other elements introduced in the learner centered training, yet did these two elements did not seem to have the same impact in changes to the participants' practice. The responses indicate that Conversation Structure made more of an impact to the respondents' practice.

Depth of Responses

There were two trends that seemed to emerge when examining the participants' responses; some participants seemed to focus on a singular element related to the learner-centered training, while others chose to include a variety of elements in the post surveys responses. From those who focused their responses on one element, the researcher was able to gain better sense of understanding what the participant meant by their responses. Elements can become integrated with one another.

Learner-centered training included a variety of elements. To gain an understanding of how the VolunTEEN interpreted those elements, we can look at their responses more holistically to get a clearer sense of the core element to which they are referring. For example, Nico seemed to focus on keeping the learner's interest by manipulating the conversation structure. There are a number of elements that this participant mentioned, however by looking at all the responses, it is all aimed at keeping and building interest. Here are responses from Nico related to learner interests when asked about the video: "The volunteer let the kids ask questions and let them guide the conversation, she didn't just tell them facts, she listened to what they said and talked

about what they mentioned.*"* The same teen later mentions the following in regards to their own changes in practice:

> "I listen to what they say and steer the conversation accordingly; I keep my plan flexible rather than giving the same exact facts in the same order… I learned about how to keep the conversation flexible and let the guest choose what to talk about… I also learned not to overload people with facts, because giving a few facts that they are interested in is a better teaching method."

By analyzing multiple responses from multiple questions, this researcher was able to gain a better understanding of what the participant meant by their responses. For example, Sara mentioned that she uses personal experiences with the subject to guide the conversation when responding to what she does on the floor that relates to what she saw in the video. Then she also mentions "Try to use guests past experiences as a guide to help them learn…" when asked to comment on key points that she took away from the training. Lastly, she adds "I try to have more of a conversation with the guests, and not just list facts," suggesting that Sara was able to identify the learner-centered characteristics in the video that related to the training.

Elaboration of Responses

Another noticeable pattern is their decisions to choose when to elaborate and when to keep their responses concise. An example that illustrated a variation of in their willingness to elaborate. is found in Lennice's post-survey. She included elements of learner-centered training and provided little detail as to how or why these elements were brought up. For example, when referring to the video, she mentioned that the volunteer "had an object to show guests." She also mentioned that when on the floor, she holds the

object to help teach the guests about that particular animal." In these responses, she mentions that she uses objects, but does not articulate how objects can vary in type, and there are advantages and disadvantages to these different types. Austen provides this response when referring to objects. "The best learning experience comes from the best models and visuals that all have advantages and disadvantages."

Another example is Raul's response. When asked to provide information on what he does on the floor that relates to what he saw on the video, he stated, "ask questions… ask people to touch something." When he was asked to provide key points he took away from the training, he elaborated on the elements he mentioned in the previous response, he said "touching makes it easier to understand, you can't just tell someone something and expect them to get it, you have to show them…" and when asked about changes in his practice he mentioned "yes, I ask more questions, engage the audience more."

Terminology

In some post-training responses, there seemed to be a change in language when compared to pre-training survey. During the training, the participants were introduced to some terms that were used to describe best practices, including, *IRE/IRF, reflective discourse, misconceptions, as well as objects*. The questions that related to the video were asked twice, once in the pre-survey and again in the post. Some participants made comments prior to training that mirrored what they stated in the post-training comments. But in a few cases, the participants seemed to be referring to the same concept, but used different terminology. For example, Austen stated the following in her pre survey response to 3 things in the video that made this a good volunteer-visitor interaction; "she also made it into more of a conversation then her talking and giving a list of facts." But

he mentioned a similar response in post, but phrased it like this, "She also kept it as a conversation and not as a monologue…"

Another example of a change of language, in response to the same question, was provided by Kamilla. This participant shortened their response, but discussed the same element. In the pre-training survey Kamilla stated: "Encouraging them to tell her what they know, asking them questions about how they got their knowledge, and referring back to previous topics." But when asked the same question in post, she states: "prior-knowledge."

Control Group

Due to scheduling factors and poor consent form return; the control group was limited to only 4 participants, making it difficult to compare the two groups. However, information can still shed some light on what types of learner-centered elements emerge as a result of experience while on the floor.

TABLE 7. Pre- and Post-identification of Best Practice Unrelated to the Learner-Centered Training Control Group ($n = 4$)

Elements of Good Practice	Pre-Training	Post-Training
Volunteer Actions	0%	0%
Positive Demeanor	25%	25%
Positive Reinforcement	0%	0%
Content Detail	50%	100%
Providing Hints	25%	25%
Station Management	50%	25%
Questioning as a means of delivering content	75%	50%

The data suggest that these control group participants also identified a relatively high number of elements of best practice unrelated to the learner-centered training, in

both pre- and post-tests, as shown in Table 7. Content-related details were mentioned by all of the participants in the post training responses. All of them included *content detail* as an important aspect of the interaction in the post-training survey. There was also appears to be a slight increase in the number amount of learner-centered elements that showed up in the post-treatment data.

TABLE 8. Pre- and Post-identification of Best Practice Related to the Learner-Centered Training Control Group (n = 4)

Learner Centered Elements of Best Practice	Pre-Training Survey Results	Post-Training Survey Results
Questioning as a means to elicit prior knowledge	25%	25%
Prior Knowledge	0%	25%
Encouraging Social Interactions	0%	0%
Keeping/Building Interest	0%	25%
Building Knowledge/ Deeper Understanding	0%	0%
Conversations/ Discourse Structure	0%	0%
Objects	25%	25%

For example, as outlined in Table 8, four elements were brought up at least once by the participants in the post-training survey. The following is an example of learner-centered related elements that were brought up in the responses to these questions include: “I ask guests what they know about the topic,” and “she took what guests where telling her and added on to their current knowledge.” These two responses occurred in post treatment responses. The limited data suggest that learner-centered elements may be a product of their volunteer experience, though further evidence would be needed to claim that with any certainty. Despite not having the learner-centered training, the youth volunteers spent nearly 80 hours of time out on the floor before taking this post survey.

Survey Questions Omitted from Analysis

While analyzing the data it became clear that not all of the questions asked in the pre- and post-training data were necessary. There were a few questions that were asked did not help to directly answer the research questions that guided this study. For example, a questions that was asked in the pre- and post-training survey included: "When your friends and family find out that you volunteer at the Aquarium and they ask you: 'What do you do there?' How do you describe your responsibilities to the people who ask?" This provide an interesting array of answers, and the majority answered that they "educate and interact with guests…" the original intention was going to help to determine if these teen volunteers identified themselves as an educator. The researcher realized that in order determine changes in their identities there needed to include additional questions to determine such changes. Another question that was asked was originally aimed to help better understand the participants views of what make a good interaction prior to watching the video by providing a multiple choice question of outcomes of what helps to make the best interaction, however this questions was omitted from the analysis because it did not consider the examples of best practices that showed up in the pre-training responses given by the participants. For example, some of the responses included "when you ask them a question that relates to your station" or "when they talk to others in your group about the topic that relates to your station." There were very little responses that considered elements brought up by the participants in the pre-training responses. Since this did not reflect initial conceptions of the participants best practices the researcher decided that the question was bias.

CHAPTER 5

DISCUSSION

Introduction

This study aimed to understand the impacts that learner-center training had on the VolunTEEN participants by specifically focusing on two types of impacts: the participants' ability to identify elements introduced in the learner-centered trainings, and to examine changes in how these teen volunteers interacted with Aquarium guests. This chapter will begin by providing a summary of the results, and then discuss how these findings can inform similar practices. In addition, this chapter will include limitations that were uncovered through the process of this investigation as well as illustrate how the original design changed as the research was conducted. Finally, this chapter will conclude by looking at how this study can be extended in order to help support the claims made within this study.

Training Impacts

From this study, the results indicate that the participants' perceptions of what they identify as best practices can be changed, but their original perceptions linger despite being introduced to new elements. In addition, the learner-centered training can also impact what they do on the Aquarium floor. However, it seems that what they identify and what they change in their practice is not necessarily the same.

Initial Perceptions of Best Practice

Initial perceptions of what the participants considered as best practices remained relativity consistent when comparing the pre- and post-survey responses. Both Volunteer Actions (any physical movements that make guests feel comfortable) and Positive Reinforcement (any reference to encouraging or supportive dialogue given by the volunteer to the learner) remained the dominant elements throughout both surveys. The presence of these elements in the responses from the pre-treatment surveys indicate that the participants have strong perceptions as to what makes a good interaction, and that despite learning new aspects regarding how to interact with Aquarium visitors, these remained an important part of the teens' ideas of a good interaction.

These particular elements lean more toward the customer service aspects of their role and less toward pedagogy. By gaining an understanding of what initial perceptions of best practice are according to the teen volunteers, this study can provide insight for similar teen volunteer programs in other ISIs. Since these elements are pre-existing and are already known to the teens as an important part of their practice, it might be worth considering that these do not need to be stressed as much during initial training. This will provide the opportunity to incorporate more elements of learner-centered interpretation in their place.

Perceptions of Best Practices Post-Training

Although the sample size was small, certain elements introduced in the learner-centered training showed a noticeable increase in post-training surveys. The teens showed increased ability to identify the pros and cons of using different types of object in their interactions with visitors. Participants also showed an increase in their ability to

identify how to assess and build on what the learner already knows. These two elements are very pertinent to their role as a VolunTEEN, and since they are able to recognize this importance from their participation in the learner centered training, it can be suggested that the next step is to work towards a change in their practice.

These teen volunteers are tasked with using a variety of objects to aid them in their discussions with guests. Every station that they are assigned throughout the day requires them to handle a variety of different objects from live animals, authentic artifacts, and even representational models. It is not surprising to see that the use of objects was one of the more highly identified elements during the training. This increased ability to identify the use of objects as best practices suggests that these volunteers gain better awareness about the importance of objects used in an interpretative interactions. These results might warrant future training to encourage transitioning their ability from just being able to identify this element to encouraging changes in their practice that relates to the use of objects.

The other element that seemed to have left an impression was participants' ability to identify uses of prior knowledge. Tapping into prior knowledge promotes a richer learning conversation and has a large impact on how people learn (Bransford, 2000). The data suggests that the majority of participants were able to identify prior knowledge as a form of best practices and the role it plays on creating a learner-centered environment. If these teens can identify visitors' prior knowledge when applied to an interaction, with further training and experience, there might also be potential for changing these volunteers' practices.

Applied Learner-Centered Strategies to Practices

In addition to identifying best practices related to the training, the researcher attempted to gain a sense of changes in the participant's practices as well. Recall that the teens were asked to describe how leaner-centered training changed what they did on the floor. The participants provided a variety of responses, and rather than providing specific examples of change the responses were more general, but informative. For example one participant state "it makes me ask more questions, make sure the guest is understanding what I am saying, make sure they go away with answered questions." While another said, "I've been more conscious of how I speak and act. I also try to demonstrate the things I am learning in the training on the floor, which usually creates a great guest interaction; it's great to be able to directly translate my training into my work on the floor."

In addition, about fifty percent of the participants who participated in the learner centered training mentioned that they improved their conversations skills with guests. For example, one teen volunteer stated "I try to have more of a conversations with guests, and not to just list facts." Perhaps the reason that this is the easiest of all elements to incorporate into their practice is as they gain more experience and have more opportunities to create conversations, their time on the floor may also allow them to build on these skills. This finding might be worth a closer look to understand what motivated this change in practice. Unfortunately, the participants did not elaborate on the reasons for this change.

The results suggest that there is potential for a change in practice to result from participation in this learner-centered training. Even despite the limited contact hours in

the training sessions, these teens are able to identify, and apply the concepts provide in their practice.

Missing Practices

It is important to note that not all individuals who participated in the learner-centered training showed increased ability to identify elements introduced in the training. Despite the overall increase in their ability to identify elements introduced in the ongoing training, the amount of elements and the different types of elements that were acknowledged varied among individuals. Perhaps the participants' own prior knowledge and perceptions of learning may have caused this variation.

Not all elements of the learner-centered training were evident in the participants' responses, "Encouraging social interactions" was an element introduced in the training and had the least amount of mentions. The volunteer in the video did not really demonstrate this element, which might explain why there was no mention of it. However, the participants did have the opportunity to mention it when asked to list key points of the training, or how the training sessions impacted what they do on the floor. Perhaps, the training sessions needed some elaborations on how to encourage these social interactions or more time to become comfortable with facilitating the training.

Implications for Practice

There is very little research done on volunteers in informal science centers, and even less on their ideas of what defines best practices and characteristics of effective training. This study can help to guide future studies that look deeper into the two subjects. Despite the inability to gather generalizations from this data set, this was a first look into what teen volunteers initially consider as best practices. Positive reinforcement

as well as volunteer actions such as getting down (physically) to the learner's level are a few of the behaviors that were seen in both pre- and post-training survey responses. By recognizing that these two elements are what youth volunteers already consider to be best practices, trainers can afford to apply less focus on them and can focus on introducing and training on other learner- centered elements.

This study also suggested that despite the limited hours of learner-centered training participants received, they were able to identify that the role prior knowledge plays in an interaction between a volunteer and a visitor is an example of best practice. Recall in Chapter 2, professional development programs for teachers usually require anywhere from 30 to 100 contact hours (Wei, Darling-Hammond, Andree, Richardson & Orphanos, 2009). Keeping to that time frame is impossible for this type of program. This study supports the idea that impacts can result from the abbreviated training. Acknowledging that these teens are able to understand and in some cases articulate the importance of prior knowledge, trainers of youth volunteer programs to consider incorporating this particular topic in their initial trainings.

In addition to the importance of prior knowledge, the use of objects was another element introduced in the learner-centered training and was most commonly identified by the VolunTEENs as best practice. Since many of these types of informal settings rely on objects to initiate interactions or keep and build guests' interests, it might be beneficial for trainings of similar programs to help youth volunteers identify strengths and weaknesses of the objects that they use. If future trainings build on the importance of these two components of learner-centered interactions, it might be possible to then transition from identification to changes in their practice.

Since these finding suggest that the learner-centered training can impact the teen volunteers' practice this can have a positive effect for the Aquarium's adult programs as well as many of the teen volunteers transition to the adult program. Extending this type of training to the adult volunteer program might help with establishing ideas of best practice on an institutional level.

Another aspect of this study was the use of video as a tool to reflect on practice. A number of professional development programs use video as a form of self-reflection. However, for the sake of preserving the teen's anonymity, rather than reflecting on their own practice, the researcher decided to use a video that included an adult volunteer and child visitor interaction. This interaction was intentionally selected to provide an example of a similar interaction that a VoluTEEN would have with a visitor. This video proved to be a useful tool; it allowed participants to articulate their ideas surrounding best practices by using examples that they saw in the video. The videos themselves may have played a role in their training. As many people learn by example, the actions of the volunteer in the video may have made an impression on the participant. Therefore, the video itself may be considered a part of their training as well. Furthermore, this is consistent with existing research where videos supported professional growth by means of reflecting on practice (Ash & Lombana, 2010).

Limitations

By the nature of this study, changes in practices were determined by self-reported data gathered from the participants' responses. A better assessment of changes in practices might have been obtained by observing these youth volunteers on the Aquarium floor. However that would have compromised the anonymous nature of the study. As

this risk was determined to be a larger threat to the validity of the study and was therefore abandoned. The small sample size impeded the ability to confidently make any generalizations on the particular outcomes of the training. However, the available data does suggest that the training may have some effects on their ability to identify good practice introduced in the interpretation training. The control group that was used also suggested that these elements did not arise only by their experience on the floor. However, the control group was too small to make any generalizations as well.

The use of video for this training allowed the participants to see practice in action. To gain a better sense of changes in the participants' practices it would have been best to use video of themselves to reflect on. Video was chosen over live observations so participants could replay the video in order to catch observations missed the first time it was watched. Using video made it easier for all participants to view the same interaction. By using the same interaction for all participants to observe, this helped control variations in interactions that would occur if the participants were observing real-time interactions. Using video did have its limitations. The participant's responses were limited to the actions of the volunteer in the video. Two of the questions used for data analysis pertained to the video. This may have limited the responses to only what was observed in the video and not their comprehensive responses that articulated their full opinions of best practices.

Concerns of Validity

There is a possibility that the change in the participants' responses from the pre- to post-training survey may be contributed to their experience on the floor rather than solely from the learner-centered training itself. The VolunTEEN program is designed to

encourage youth volunteers to interact with one another. They may be paired up at particular station or engaged in dialogue with one another. It was impossible to prevent them from sharing information with one another, as well as with other staff. At certain stations, they were assigned along with other adult volunteer staff, and some paid employees. Because of these possible interactions, it is hard to say with certainty that the teen's responses may not be entirely due to just the training alone. These interactions provide an opportunity to observe others who may have established these skills, allowing these skills to develop from their experience on the floor, and not necessarily emerge as a result of their training. If much of their learning comes from their experience on the floor, these social interactions with other staff may also contribute to a decline of the skills they learn through the training as well. For example: if they happen to interact with staff that may not have these skills, the participants acquire habits and methods contrary to the training.

Some participants entered the program with different experience levels. Many of them had a pre-existing interest in biology and other science related fields, so it was hard to determine just what students were bringing in with them to the program. The post-test did help to provide a comparison to account for their prior-knowledge and thoughts surrounding good practices. Their perceptions of how knowledge is obtained by a learner were never identified.

Another concern was the use of open-ended survey questions, rather than an interview, that did not allow for probing. In some of the responses, further explanation may have specified some unclear responses that the participants provided in the surveys. Probing would have also helped to get a better sense of the source of their responses,

whether they related to the learner-centered training or were gained as a result of their experiences at the Aquarium. Probing would have also helped to provide more clarification of some of the post responses. For example, when asked to, "Describe at least three things that you saw in the video that made this a good volunteer/visit interaction," one person wrote the following response: "Asking questions, guests' prior knowledge, model." It is hard to determine the depth of the respondent's understanding when only short phrases are listed in their responses. Interviews were not chosen in order to preserve the anonymity of the participants. Establishing anonymity was an important factor of this research project, because the researcher was also facilitated the training. Using an interview as a method of gathering data was abandoned because it may have produced a larger bias.

Modifications to Procedure

The initial research plan was to have all teen volunteers who were participating in the VolunTEEN summer session take part in the investigation. During the summer session, the number of participants generally increases from 24 in the fall and spring sessions, to 60-80 participants in the summer session. The original plan was to have all sixty participants participate in the study. However, upon their enrollment in the program, the participants were given a number of personnel documents from the Aquarium. All paperwork was provided at the beginning of the VolunTEEN session, with the exception of their research consent forms, which were not included with the other documents. These forms were provided to them later, after receiving permission from the internal review board a week before they were to begin their work on the aquarium floor as volunteers, which was also right before they were to begin the learner-

centered training. Each teen was provided with the added consent forms and those who brought theirs back the very next shift were asked to take the pre survey, as training was to start on the following session. Unfortunately, a lower number than expected of signed consent forms was returned in time for the study to commence. Due to these time constraints, the researcher was not able to follow up or provide additional reminders to those who forgot. As a result, far fewer VolunTEENs participated in the study than expected. The total number of VolunTEENs who participated was 17. Based on their shift assignments, 14 VolunTEENs participated in the learner-centered training and 4 participated in the animal content training.

An additional modification was made to the training. Originally, the learner-centered training was going to consist of information on visitors' agenda and its impacts on the visitors' experiences. However, due to time constraints, these particular elements were not introduced. The pre-training survey did include questions pertaining to their thoughts on visitors' agendas and questions related to this element were excluded from the post-training survey.

Future Studies

Modifications in Progress

The VolunTEEN program is an ongoing program with new participants year round. With recruitment cycles occurring in the fall, spring and summer there was an opportunity to implement modifications in the following session. The researcher of this study decided to implement several modifications, which were suggested by this original study, and are described in Table 9. A new data set was collected from the following

session's cohort of volunteers. Some of the changes were made to help strengthen this study, as well as address some of the challenges that were identified through the process.

TABLE 9. Modifications in Progress

Areas of Modification	Actions Taken
Control Group	Increasing the number of participants included in the control group so that it is comparable the treatment group.
Survey questions	Ask questions that pertain to VolunTEEN's prior experiences that relate to helping people learn
Protocol	Allowing participants to create an alias rather than a numeric code. In post - providing all aliases so participants could recall the name they created in the pre-test.

In the original proposal, those receiving the marine science and animal content training were intended be a larger sample size than occurred. This new data set now consists of comparable treatment and control groups. This new data set included a large majority of all youth volunteers participating in the VolunTEEN program; creating a larger sample size for this new data set. To gain a better idea of what prior experiences the participants had that were similar to their role as a VolunTEEN, two questions were added in an attempt to gain an understanding of their prior experiences related their thoughts on how people learn. To address the limitation of actions in the video, questions were introduced to allow the participants to express examples of missed opportunities. Lastly, another change to the survey was the way in which the researcher identified the pre and post surveys. I n this follow-up study the participants were asked

to use a numerical ID, which did not include any identifiable information. Some of the participants could not remember what digits they had used in the pre-training survey, so they wrote, "I forgot." In the new survey, the participants were asked to create a memorable alias allowing for self-identification while preserving anonymity. Their responses were then presented in random order for a prost-survey question. Then their responses were used in a list in the post survey question and presented in random order in order for them to choose from a list of all participants made up code name. This proved successful in that all participants were able to recognize their code name.

Additional Suggestions

With the luxury of having multiple sessions throughout the year, it would be possible for future studies to be conducted with all participants in the same cohort receiving the same type of training. The following session would allow for the next cohort to receive the other type of training. This would help to manage participants who would have to switch days and insure that they were still receiving the same training. Minimize the amount of discussions between those receiving different training. It would also elevate the amount of preparation required for training.

The video used in the pre- and post-training surveys was a preexisting video of a staff member as she interacted with guests. It was entirely unscripted, and with her permission, was used for the purposes of the study. If the video incorporated clear examples of elements introduced in the learner-centered training, this would be more likely to provide a better sense of the participants' ability to identify these elements.

When choosing the video used in the pre- and post- training surveys, there were some considerations that were taken into account. At the time only a few of our

education staff had the opportunity to videotape themselves interacting with Aquarium guests, so number of available videos were limited. It was also important for the researcher to provide a video of a staff member the participants would not recognize, to limit bias responses. As our library grows, future studies conducted using our video resources can grow to help better illustrate learner-centered interactions.

Anonymity is a safe way to limit risks associated with using minors in a research study. Taking out the anonymity and allowing participants to reflect on their own practice, since according to the research, it helps to promote changes in practice (LHS, 2011). The use of video technology and in person interviews can help provide clearer understanding of participants' understanding of learner-centered training. This can also provide further evidence that supports their ability to identify practice, but also examine changes in practice, other than self-reported accounts of change.

Based on the existing research, reflecting on one's own practices can lead to changes in practices (Danielowich, 2007). Even though the participants were able to briefly reflect on their own practices during the training, the amount of time spent independently reflecting on their own practices was not measured. Providing opportunities in addition to their training for reflection may help to increase or apply those new ideas to their practices.

Many of these participants go on to become education volunteers at the Aquarium, and some have continued their volunteer service for years after and are now adults. It might be possible to extend this study to look for longitudinal change. Interviewing those who continue their volunteer service with the Aquarium can help uncover lasting impacts of the learner-centered training.

To learn more about the effects of this training, we can examine effects of other types of staff within the Aquarium. This learner-centered training has been provided to some of the part-time education staff, yet there has not been any formal evaluation or research done on this group. Adult volunteers in our education department have not received any related training. However, these education volunteers play similar roles to both VolunTEENs and paid, part-time educators and also impact the visitors' experience. In addition to applying this training to other departments within the Aquarium, applying this training to other similar settings and then seeing how it works in other types of informal science institutions, would also help gain an understanding of the impacts that this training has on informal science educators.

Conclusion

With limited research available on the subject of youth volunteer training, and youth volunteers' ideas surrounding learner-centered practice, there are a number of areas where future studies can help further our understanding. This study begins to touch on what teen volunteers initially consider to be best practices. Understanding how these perceptions hold strong despite being introduced to other ways to engage with guests can help to inform similar volunteer programs of what prior knowledge volunteers are bringing with them. This study also suggests the time and resources invested in short training session can result in impacts that affect these youth volunteers' ideas, as well as their practice. There is currently no census of what types of training youth volunteers in informal science institutions receive. By demonstrating the effects of one training on youth volunteer staff, this study has attempted to lay the groundwork in this field that deserves additional research.

APPENDICES

APPENDIX A

LEARNER-CENTERED TRAINING

APPENDIX A
LEARNER-CENTERED TRAINING

Training 1

Objective: To introduce concepts related to how people learn.
Location: Classroom environment where participants can easily interact with one another.
Materials:

- ☐ Computer
- ☐ PowerPoint
- ☐ Assorted Cups
- ☐ Assorted Towels
- ☐ Towels
- ☐ Tub for water
- ☐ Pennies

Format:

Introduce prompts to encourage sharing among participants. Using the think-pair-share strategy

After each prompt, use discussion-mapping strategy to encourage discussion.

Prompts:

"How can you tell when a guest is learning when they visit the Aquarium?"

"What are examples of situations or settings that encourage learning?"

Note: ask them to think about places that they learn.

Collect all responses in order to reference after activity.
Activity:

Cup-Card

Provide all supplies mentioned above to participants.

Prompt:

1. Can you get the card to stay on the cup?
2. How does the shape of the container affect the result?
3. What about the shape of the container?
4. What generalizations can you make?
5. Is there a relationship between the size/shape, amount of water, or the number of pennies it would hold?
6. Do you find anything puzzling about your discoveries?

Note: the purpose is not to gain a complete sense of the physics, but to create a discussion about the learning process.
Ask:

- ☐ What did you learn?
- ☐ Howe did you learn it?
- ☐ When did the learning occur?

Make connections to what was previously written on the board.

Prompt: “How does this discussion apply specifically to what we do on the floor?”

Some key points:

- ☐ Learning is social
- ☐ We connect new information to what we already know
- ☐ Learning is a process
- ☐ Learning Science is done through exploration

Ask:
How does this relate to what we do on the floor?

Introduce the research:
Read each part of the research and ask participants to provide their thoughts and ideas. Compare it to what was said in the prompts above.

“ Experience in informal environments are characterized by learner-motivated, guided by learner interest, voluntary, ongoing, contextually relevant, and collaborative (Falk & Dierking, 2000)”

Contrary to the idea that schools are responsible for addressing the scientific knowledge needs of society, the reality is that schools cannot act alone and individuals spend less than 9% of their lives in school (Falk & Dierking, 2010).

Learning Outcomes:
Participants should know learning happens all of the time. People are constantly trying to make sense of their environment, and make connections to what they already know. Participants should also learn that Aquarium visitors are also processing information throughout their visit.

Training 2
Objective:
To introduce the role prior knowledge plays in a learner-centered experience.

Materials:
- ☐ Salt water
- ☐ Fresh water
- ☐ Food coloring
- ☐ Cups
- ☐ 2 large ice cubes

Format:
Have participants break up into groups and discuss the following statement:

"Learner's prior ideas, their 'common sense' and 'everyday thinking' are intelligent and useful. If those ideas are not engaged, learners often dismiss science teaching as irrelevant" (Hammer & van Zee 2006, pg. 14).

Prompt:
- ☐ Do you agree with this statement?

  Why?

- ☐ How would you describe this concept?

Note: Incorporate their own words and how it relates to the statement. If no one has come up with the term "prior knowledge" Introduce the term.

- ☐ How do learners access prior knowledge?

Note: Have participants discuss.

- ☐ What are some ways you access guests' prior knowledge
- ☐ Does the way you access learners' prior knowledge differ in the different types of interactions, for example do you the same strategies to access prior knowledge at touchpools, in the same way you access prior knowledge at a station like crab molt?
- ☐ What are some reasons you would want to access a person's prior knowledge?

What the research says:
Starting in infancy, learners develop a wide range of ways of understanding, organizing, and reasoning about the world around them through experiences and interactions (Duschl et al., 2007;Roschelle, 1995)

Activity:
Ice Cubes Challenge
Provide all materials presented above.

Prompt:

- ☐ There are two cups: one labeled salt water, and one labeled fresh. If you place the two ice cubes in each cup at the same time and don't stir the water, in which cup do you predict that the ice will melt faster?

  Why? Explain why you think that will happen.
- ☐ Now do it an see what happens.
  - Which one melted faster.
  - Why do you think that happened?
- ☐ Add a couple of drops of food coloring to each up without disturbing the water in the cup
  - Does this help you explain what you think is happening?

Notes:

- ☐ Have them work in small groups. While doing this activity remind them to think about prior knowledge
- ☐ Distribute materials.
- ☐ Their task is to come up with an explanation for what they observe.

Post Activity Prompt: (think pair share)

- ☐ How does your prior knowledge accessed and used in the Ice Cubes activity?
- ☐ How do you connect with guest's prior knowledge?

Note:
Use discussion mapping to keep conversation going. Give plenty of time to share how prior knowledge accessed used.
Discuss questions to help promote assessing prior knowledge and teaching them how it's different then accessing prior knowledge.

After activity:

- ☐ Explain how density caused the ice to melt faster in fresh water.

Learner Objectives:
Participants should know that people visit the Aquarium with all different levels of understanding, and to make an interaction more learner-centered staff must attempt to gain a sense of what the learner knows, as well as build on to their prior knowledge. Participants will also know misconceptions play a big role in a learner's understanding and these misconceptions must be realized before new knowledge is learned.

Training 3

Objective: Introduce conversation structures and the role they play in a learner-centered environment.

Materials:

- ☐ Role-play skits
- ☐ Otter pelt
- ☐ Square rectangle
- ☐ Picture of otters
- ☐ Magnifying glass

Format:
Introduce topic; by learning how conversations can contribute to building knowledge, and examine how informal science educators can promote or hinder learning conversations.

Prompt:

- ☐ What is it that makes conversations important for learning?
- ☐ What are characteristics of a conversation that make it a "learning conversation"?

Create two charts: one that says "Role of Conversation in Learning" and the other "Characteristics of a Learning Conversation" Take their responses and write down what they say.

Example of learning conversations include:

- ☐ **Learners Participation**
- ☐ **Memorable**
- ☐ **Express Knowledge**
- ☐ **Express understanding**
- ☐ **Constructs understanding**

Example of Characteristics of Learning Conversations:

- ☐ **Mutual**
- ☐ **Components**
- ☐ **Learning Oriented**

Notes:
To find explanations of these elements see Module 3 Session 1 of ROP 2011.

Activity:
Role-plays, let participants know that they will be observing and participating in role plays, where they are to look for who is talking, how they are talking, patterns of talk.
Note: Each role play includes 3 characters at the sea otter exhibit.
Role play number 1: Educator Monologue
Role-play number 2: IRE/IRF
Role-play 3: Reflective Discourse
After each role-play ask:

- ☐ Who is talking?
- ☐ Do the educators and learners contribute equally to the conversation?
- ☐ How are they talking?
    - Are questions asked?
        - Who is asking them?
        - What kinds of questions are being asked?
- ☐ Is there information in response to the questions?
    - Who provides the information
    - What kind of information is provided?

Discuss the pattern of talk

- ☐ Educator Monologue: Educator was doing most of the talking. The educator usually initiates the questions or comments.
- ☐ IRE/IRF: the learner and the educator took turns talking. The educator initiates the conversation, then the learner responds, and the educator evaluates what the learner says, or they will follow-up with a question or a statement to probe the learner for more information's
- ☐ Reflective discourse: the learner and the educators take turns talking. The educator and the learner initiate, respond and follow up each other's comments. Both are asking questions, and both are answering questions.

Prompt: (share in small groups)

- ☐ Which did you think was the most effective?
- ☐ Which do you think resembles what you do on the floor?
- ☐ What do are some ways you can modify what you say to resemble a more effective pattern of talk (think specifically about your stations)?

Training 4
Objects

Objective: To introduce the role that objects play in a learner-centered environment.

Materials:

- ☐ Real squid
- ☐ Dissection supplies
- ☐ Squid plush
- ☐ Squid model
- ☐ iPad
- ☐ Squid Photos
- ☐ Squid info handout

Format:
We use objects to help people learn. There are different types of objects that we use.
Prompt:

- ☐ What are some examples of objects that you as a VolunTEEN?
- ☐ How do you use these objects to support learning and sustain engagement?

Notes: introduce the five features of objects:

- ☐ Natural Objects: crab molt, Jelly Roll
  - Use real squid
- ☐ Representational: abalone plush with eggs
  - Use plush and model
- ☐ Virtual/Digital: pictures of puffins, octopus movie
  - Use video of squid eating
  - photo
- ☐ Artifactual: Mark V helmet
- ☐ Interactive: Puffin station/ blubber glove

Activity:

- ☐ Break up into 4 groups
- ☐ Handout how squid eat fact sheet. Ask participants to read it and be able to talk about how squid eat.
- ☐ Assign each group a different object.
- ☐ Ask them to create a skit, using their object do demonstrate how squids eat.
- ☐ After each skit ask:
  - How did that object support learning?
  - Was there any limitations to using only that object?

Learning Objectives:
Discuss how the real squid, was most engaging, but small. With model, discuss how the model was larger, but left out some detail, and was not anatomically accurate. Discuss how video showed the actions, but was quick and if not paying attention, the learner

could miss some key points. The pictures were still so that helped to point out some of the squids features, but limited to describing only what was shown in the photo.

APPENDIX B

ANIMAL CONTENT TRAINING

APPENDIX B

ANIMAL CONTENT TRAINING

Training 1

Abalone

Objective: Take a more in depth look at abalone.

Materials

- ☐ Abalone PowerPoint
- ☐ Abalone Species Identification sheets
- ☐ Variety of Abalone Shells (different species)

Format:

Show PowerPoint that provides information on abalone and AOP breeding program. Activity shows how to identify different abalone. Participants should know which are endangered and how to tell them apart.

Key Points introduced in the PowerpPoint:

- ☐ Species Distribution in CA
- ☐ Life Cycle
- ☐ Adult Anatomy
- ☐ Conservation Efforts
- ☐ AOP/NOAA

Activity:

- ☐ Pass out abalone shells and species identification sheets
- ☐ Have them work in groups to identify as many shells as they can.

Ask:

- ☐ What species is this
- ☐ What are some ways that make them different

Training 2
Pinnipeds

Objective:
Students will know the difference between seals and sea lions, learn about their natural history and behaviors.
Format:
Show PowerPoint to review similarities and differences of seals and sea lions

- ☐ Diet
- ☐ Size
- ☐ Breeding cycle
- ☐ Adaptations

Introduce behaviors and Ethogram Activity

- ☐ Ethograms are what wildlife biologists use to document behavior of animals in their natural habitats. You will use this chart and stopwatch to document the behavior of one individual in pinniped exhibit.
- ☐ Review behaviors
- ☐ Pick a single animal; it could be a seal or a sea lion.
- ☐ Every minute and thirty seconds, put a check mark next to the behavior you saw it doing at that exact moment when the time was up. Do this for 9 minutes.
- ☐ If you see it doing something else you can describe it in the notes section.
- ☐ Come back to the classroom after the observations are complete

Back at the classroom:

- ☐ Introduce one graph for Seals and one graph for Sea Lions
- ☐ Have each group come up and plot points on the graphs for the different behaviors they saw their animal doing.
- ☐ Discuss behaviors and compare to what they normally see them doing in the exhibit.

Ask:

- ☐ If we did this in the morning or evening do you think the results will be the same?
- ☐ Do you think if we observed these animals in their natural habitat you would have the same results?

Training 3
Sea Otters

Objective: Learning about keystone species and kelp forest habitat with a focus on otter adaptations
Materials:

- ☐ Otter Pelt
- ☐ Otter Skull
- ☐ Rumbly Tumbly Tidepool Plushes
- ☐ Rumbly Tumbly Tidepool Plush Rocks
- ☐ Buckets

Format: Based on what students come up with discuss various adaptations sea otters have. Classroom discussion with indoor activity
Prompt: In pairs come up some things you know about otters.
Key point to cover:

- ☐ Fur
- ☐ Fur Trade
- ☐ Population Decline
- ☐ Current Threats
- ☐ Keystone Species
- ☐ Urchin Barren
- ☐ Metabolism
- ☐ Sea otter pockets

Activity: Sea otter pocket relay
Sea otters forage for food on the sea floor, they find as many food items as they can and store them in a fold under their arm called a pocket.
Place the tidepool plushes, which will be used as "otter food" and plush rocks all around the floor. Break up the class into two groups. Have them line up students must grab a "otter food" then find a rock, bang the plush on the rock three times then pass it to the rest of the members in line while only holding it by their under arm, the last person will then drop it in a bucket. Once all the otter food is gone, we will count to see how many food items each team has.

Training 4
Corals

Objective: Students will learn that corals are animals and play various symbiotic roles with other organisms.
Format:
Using various objects to describe the key role that hard coral plays in reef ecosystems. Introduce the three types of symbiosis that are common among reef dwellers. The activity will demonstrate how organisms work together.
Materials:

- ☐ Coral Polyp Model
- ☐ Coral apron
- ☐ Coral Fragments
- ☐ Co-opp-a-walks

Prompt:
What do you know about corals
What is a coral reef?
Use their answers to discuss the following key points:

- ☐ Corals are animals – cnidarians

- ☐ Corals gain 20% of food from nematocysts and 80% from zooxanthellae
- ☐ Explain zooxanthellae
- ☐ Introduce symbiosis
    - Commensalism
    - Parasitism
    - Mutualism

- ☐ Corals are reef builders
- ☐ Fish use reef

Activity:
Using the "Co-oop-a-walks" teams have to work together in order to all move the planks without falling off. The first team to the finish line, wins.

Wrap-up:
Describe how organisms can form relationships that will benefit one another. Ask group what type of symbiotic relationship they were creating.
Have groups come up with other types of symbiotic relationships example: Mola mola.

APPENDIX C

PRE-TRAINING SURVEY

APPENDIX C
PRE-TRAINING SURVEY

1st Survey

Hello

ID: 2

Thank you for taking the time to complete this survey. This is an anonymous survey please do not include anything that may identify you such as name, email, or birthday, etc. At some point in this survey you will be asked to watched the video provided. Please begin the video and watch it in its entirety, then continue with the rest of the survey. At any point you may re-watch the video as many times as you'd like. Take as much time as you need to complete the survey. During the survey, you may decline to answer any question you do not feel comfortable answering, by clicking the "Next" button.

( ) Yes, I do agree to take the survey.
( ) I do not agree to take the survey

(untitled)

ID: 4

Please choose a 5-7 digit identification number. This could be a parent or friend's birthday, a locker combination, a student number. It should not be a home address, phone, birthday or social security number

_____

(untitled)

ID: 5

When your friends and family find out that you volunteer at the Aquarium and they ask you: "What do you do there?" How do you describe your responsibilities to the people who ask?

_____
_____
_____
_____

(untitled)

ID: 27

In you opinion, what to you think helps to create the best interaction between a visitor and volunteer when talking about a topic related to your stations?

( ) When you ask them questions that relates to your station
( ) Teaching them something new that relates to your station
( ) When the visitor asks you questions about your station's topic
( ) When you have their attention and can tell them everything you know about your stations topic
( ) When they talk to others in their group about the topic that relates to your station
( ) Other, please describe.: _____
( ) I decline to answer

(untitled)

ID: 43

You are about to watch the video. The remaining questions of this survey will pertain to your thoughts about the video. To access the video press "Watch Video"

ID: 41

Watch Video

ID: 44

You can watch the video as many times as you feel necessary. To access the video again, press the back button, or copy and paste this link on a new tab in your web browser. https://youtu.be/cWtobR_bUa8

(untitled)

ID: 13

Describe at least three things that you saw in the video that made this a good volunteer-visitor interaction? Why?

_____
_____
_____
_____

(untitled)

ID: 19

Is there anything you would have done differently in this situation?
( ) Yes
( ) No
( ) Decline to Answer

(untitled)

ID: 18

What would have you done instead, and why?
_____
_____
_____
_____

(untitled)

ID: 17

Are there any example of things you saw the volunteer do or say in the video that you do/say when out on the floor?
_____
_____
_____
_____

(untitled)

ID: 22

Can you get a sense of the reason why the visitors' decided to come to the Aquarium on that particular day?
_____
_____

_____
_____

(untitled)

ID: 23

Is there anything in the video that relates to the training you already received?

_____
_____
_____
_____

(untitled)

Action: Review: Thank you for completing this survey, before you submit, please take a moment to review your answers provided below. Feel free to go back and edit your previous responses or press "Submit" to conclude this survey.

Thank You!

ID: 1

Thank you for taking our survey. Your response is very important to us.

APPENDIX D

POST-TRAINING SURVEY

APPENDIX D
POST-TRAINING SURVEY

2nd Survey

Page One

ID: 2

Thank you for taking the time to complete this survey. This is an anonymous survey. Please do not include anything that may identify you such as name, email, or birthdate. At some point in this survey you will be asked to watch the video provided. Please begin the video and watch it in its entirety, then continue with the rest of the survey. At any point you may re-watch any parts of the video while taking this survey. Take as much time as you need to complete the survey. During the survey, you may decline to answer any question you do not feel comfortable answering by clicking the "next" button at the bottom of the page.

( ) I agree to take the survey
( ) I decline to take the survey

(untitled)

ID: 3

Please think back to the first survey you took a couple of weeks ago. Enter the SAME 5-7 digit identification number that you inputted last time. If you forgot, please write, "I forgot" in the blank field below. This identification number could be a parent or friend's birthday, a locker combination, a student number, etc. It should not be a home address, phone, birthday, or social security number.

_____

(untitled)

ID: 4

When your friends and family find out that you volunteer at the Aquarium and they ask you: "What do you do there?" How do you describe your responsibilities to the people who ask?

_____
_____
_____
_____

(untitled)

ID: 28

In your opinion, what do you think helps to create the best interaction between a visitor and volunteer when talking about a topic related to your stations?

( ) When you ask them questions that relates to your station
( ) Teaching them something new that relates to your station
( ) When the visitor asks you questions about your station's topic
( ) When you have their attention and can tell them everything you know about your station's topic
( ) When they talk to others in their group about the topic that relates to your station
( ) Other, please describe.: _____
( ) I decline to answer

(untitled)

ID: 31

You are about to watch the video. The remianing questions of this survey will pertain to your thoughts about the video. To access the video press "Watch Video"

ID: 27

Watch Video

ID: 32

You can watch the video as many times as you feel necessary. To access the video again, press the back button, or copy and paste this link on a new tab in your web browser. https://youtu.be/cWtobR_bUa8

(untitled)

ID: 11

Describe at least three things that you saw in the video that made this a good volunteer-visitor interaction?

_____
_____
_____

_____

(untitled)

ID: 12

Is there anything you would have done differently in this situation?

( ) Yes
( ) No
( ) Decline to answer

(untitled)

ID: 14

What would have you done instead, and why?

_____
_____
_____
_____

(untitled)

ID: 13

List any examples from the video of things you do when out on the floor.

_____
_____
_____
_____

(untitled)

ID: 17

Think back to the each training sessions that you participated in. List the key points or any other bits of information that you took away or learned from each training session you participated in.

_____
_____

_____
_____

(untitled)

ID: 18

Have the training sessions impacted what you do on the floor?
( ) Yes
( ) No
( ) Decline to Answer

(untitled)

ID: 39

Have the training sessions impacted what you do on the floor?
( ) Yes
( ) No
( ) Decline to Answer

(untitled)

ID: 20

If so, in what ways has it changed?

_____
_____
_____
_____

(untitled)

ID: 35

1) If not, what info do you think we should include in the training to make it more impactful?

_____

_____
_____
_____

(untitled)

ID: 22

How much of the knowledge that YOU gain comes from your own experiences out on the floor?

( ) Almost all of it
( ) Most of it
( ) Some of it
( ) Not much of it
( ) None of it

ID: 23

In addition to your experiences on the floor, what other sources do you utilize to obtain knowledge pertaining to your responsibilities at the Aquarium?

_____
_____
_____
_____

(untitled)

Thank You!

ID: 1

Thank you for taking our survey. Your response is very important to us.

APPENDIX E

CONSENT FORM PARENT/GARDIAN

APPENDIX E
CONSENT FORM PARENT/GARDIAN

CONSENT TO PARTICIPATE IN RESEARCH

The Examining the Effects of a Training Program for Youth Volunteers at an Aquarium

You are asked for the permission to allow your child to participate in a research study conducted by **Raelene Bautista, graduate student** from the **Science Education department at California State University, Long Beach** in conjunction with the **Aquarium of the Pacific in Long Beach.** The results of this study will contribute to the graduate student's thesis project. You were selected as a possible participant for this study as a member of a youth volunteer program at the Aquarium of the Pacific.

PURPOSE OF THE STUDY

As part of the VolunTEEN program, your child will receive additional training aimed to improve their skills and knowledge as related to their volunteer responsibilities. This study seeks to better understand how training affects their views of effective guest engagement.

PROCEDURES

If you allow your child to participate in this study, your child will be asked to do the following:

- Your child will be asked to participate in a 30-minute online questionnaire prior to any additional training.
- Your child will be asked to participate in another 30-minute online questionnaire after the additional trainings.
  -At some point during each of the questionnaires your child will be asked to watch a short video. For the majority of these questions your child will be asked to share their thoughts on the video.

POTENTIAL RISKS AND DISCOMFORTS

There are limited risks to participation in this study. The main risk is that your child could feel uncomfortable due to pressures involved with answering questions "correctly." There is no "correct" answer; this study aims to collect your child's opinion only. You and your child may be concerned that their responses may in some way affect their status or participation in the VolunTEEN program. However, their responses will have no affect on their participation in the program. Their answers to the questionnaires will remain completely anonymous. Data will be stored securely for at least three years from the date the study is completed before they are finally destroyed.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Findings from this study will provide aquariums and similar institutions a better understanding of content of the training will help improve guest and volunteer interactions.

PAYMENT FOR PARTICIPATION

There will be no payment for your child's participation in this study.

CONFIDENTIALITY

Efforts will be made to maintain the confidentiality of the data collected. Your child will be asked to provide a pseudonym that will keep questionnaire responses completely antonymous. Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with your permission or as required by law.

PARTICIPATION AND WITHDRAWAL

Participation of this study requires the consent of both you and your child. If your child would like to participate your consent is required. You or your child can choose to withdraw your child from the study at any time without consequences of any kind. Participation or non-participation will not affect any other opportunities or plans that pertain to the VolunTEEN program. The investigator may withdraw you from this research if circumstances arise which in the opinion of the researcher warrant doing so.

IDENTIFICATION OF INVESTIGATOR

If you have any questions or concerns about the research, please feel free to contact **Raelene Bautista** raelenebautista@yahoo.com **or 562-457-8317.**

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your child's participation in this research study. If you have questions regarding your child's rights as a research subject, contact the **Office of University Research, CSU Long Beach, 1250 Bellflower Blvd., Long Beach, Ca 90840; Telephone: (562) 985-5314 or email to** research@csulb.edu

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SIGNATURE OF Parent/Legal Guardian

I understand the procedures and conditions of my child's participation described above. My questions have been answered to my satisfaction, and I give my permission for my child to participate in this study.

_____ _____

Printed Name of Parent/Guardian Printed Name of Child

_____ _____

Signature of Parent/Guardian Date

APPENDIX F

CONSENT FORM PARENT/GARDIAN

APPENDIX F
CONSENT FORM MINOR

CONSENT TO PARTICIPATE IN RESEARCH (Minor)

The Examining the Effects of A Training Program for Youth Volunteers at an Aquarium

You are asked to participate in a research study conducted by **Raelene Bautista, graduate student** from the **Science Education department at California State University, Long Beach** in conjunction with the **Aquarium of the Pacific in Long Beach.** The results of this study will contribute to the graduate student's thesis project. You were selected as a possible participant for this study as a member of a youth volunteer program at the Aquarium of the Pacific.

PURPOSE OF THE STUDY

As part of the VolunTEEN program, you will receive additional training aimed to improve your skills and knowledge as related to your volunteer responsibilities. This study seeks to better understand what types of topics presented in the training makes the most impact on your views of effective guest engagement. The training will be presented each week for one hour and consist of topics related to your stations and different ways to interact with guests.

PROCEDURES

If you choose to participate in this study, you will be asked to do the following:

- To participate in a 30-minute online questionnaire prior to any additional training.
- To participate in another 30-minute online questionnaire after the additional trainings.
  -At some point during each of the questionnaires you will be asked to watch a short video. For the majority of these questions you will be asked to share your thoughts on the video.

POTENTIAL RISKS AND DISCOMFORTS

There are limited risks to participation in this study. The main risk is that you could feel uncomfortable due to pressures involved with answering questions "correctly." There is no "correct" answer; this study aims to collect your opinion only. You may be concerned that your responses may in some way affect your status or participation in the VolunTEEN program. However, your responses will have no affect on your participation in the program. Your answers to the questionnaires will remain completely anonymous. Data will be stored securely for at least three years from the date the study is completed before they are finally destroyed.

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Participation will provide you with additional opportunity for reflection on your efforts as interpreter. Findings from this study will also provide aquariums and similar institutions a better understanding of what content provided in the training will help improve guest and volunteer interactions.

PAYMENT FOR PARTICIPATION

There will be no payment for your participation in this study.

CONFIDENTIALITY

Efforts will be made to maintain the confidentiality of the data collected. You will be asked to provide a pseudonym that will keep questionnaire responses completely antonymous. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with you and your parent or legal guardian permission or as required by law.

PARTICIPATION AND WITHDRAWAL

Participation of this study requires the consent of both you and your parents. If you would like to participate your parent's permission is required. You or your parent can choose to withdraw you from the study at any time without consequences of any kind. Participation or non-participation will not affect any other opportunities or plans that pertain to the VolunTEEN program. At anytime during the questionnaire you can skip any question that you do not wish to answer without being withdrawn from the study. The investigator may withdraw you from this research if circumstances arise which in the opinion of the researcher warrant doing so.

IDENTIFICATION OF INVESTIGATOR

If you have any questions or concerns about the research, please feel free to contact **Raelene Bautista** email: raelenebautista@yahoo.com ph. 562-457-8317. Or **Dr. James Kisiel email:** j.kisiel@cuslb.edu ph**.** (562) 985-1325.

RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact the **Office of University Research, CSU Long Beach, 1250 Bellflower Blvd., Long Beach, Ca 90840; Telephone: (562) 985-5314 or email to** research@csulb.edu

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SIGNATURE OF RESEARCH SUBJECTS

I understand the procedures and conditions of my participation described above. My questions have been answered to my satisfaction, and I agree to participate in this study.

_____ _____

Signature of VolunTEEN Date

_____

Name (please print)

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