

Learning Through Play: Hands-On Activities in a Museum Summer Camp

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**To the Faculty of The University of the Arts**

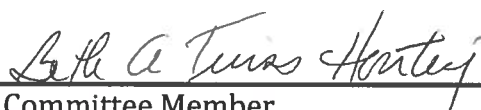
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## **Abstract**

This research investigates how different types of play in a museum summer camp affects the engagement of children at different ages. In the summer camp, it was found that play that is motivated by fun and derived from hands-on activities provides children with the drive to utilize new skills learned in a museum summer camp. Role and game play transcended all age groups and gave campers an incentive to learn because these plays placed campers at the center of a problem, giving them hands-on experience in an activity and allowed them to use information, concepts and skills learned in summer camp activities in an enjoyable way. Over the course of six weeks from July to August, campers from a museum summer camp were given surveys twice a week to share what they thought about the activities and what they took away. Summer camp counselors were also given surveys to complete to discuss what they saw in the campers and what sort of play activities engaged them the most. It was discovered that campers were engaged the most with activities that allowed them to be hands-on with materials and objects in activities, and also to be what campers considered “fun.” Two types of play, game and role-play stood out as campers gave these kinds of activities usually the highest grades.

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## Nomenclature

**Fun** – When campers described a feeling of enjoyment during an activity. This is a response many campers took into account when they described an activity that they liked in the museum summer camp. Campers were asked to grade activities and explain why they graded it as so. Many times their responses to this was “fun” because they enjoyed the activity. To them an activity must have some component of fun for them to give it a good grade.

**Hands-On Activity** – Activities that allow campers to directly engage in learning by doing. This allows the campers to explore solutions to questions asked and work either by themselves or together to create or use new skills learned.

**Play** – An act people engaged in and from which they receive intrinsic pleasure. At the summer camp, campers engaged in different types of play such as role and game play. Role-play allowed campers to take on different personas like a scientist or an artist, while Game play allowed campers to compete towards certain goals in activities that had required critical-thinking and at times, problem solving through teamwork.

**Engagement** - Learning that people participate in that helps them facilitate information better through first hand experiences or transfer of knowledge.<sup>1</sup>

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<sup>1</sup> David Hung, Seng Chee Tan, and Thiam Seng Koh, “Engaged Learning: Making Learning an Authentic Experience,” in *Engaged Learning with Emerging Technologies* eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), 30.



## Chapter I: Introduction

One of the best ways to gain a child's attention is to create an atmosphere where play is prevalent and the child is given the opportunity to engage in activities that expose the child to new ideas. Play is an activity that allows children to solve and engage with different kinds of problem. History museums have play activities that try to engage children in problem or concepts. Role and Game-Play are two types of play that can be found in a history museum.

History museums are found throughout the country, and are one type of museum visited frequently. For example, the National Museum of American History had a total of 3.6 million visits this year so far.<sup>2</sup> If a history museum is not accessible to a broad audience, "They [the audience] are bored, even turned off when it's [the museum] not done right. If a history museum is going to be successful it must understand their audiences in nuanced ways and be ready to provide meaningful points of access for them."<sup>3</sup> James Chung and Susie Wilkening of the market research firm Reach Advisors conducted a survey sponsored by the Smithsonian Institution on middle school students that reinforces this idea of middle school students looking for a more "fun" experience.<sup>4</sup> History museums are finding ways to engage current and new audiences in the subject of history. At the beginning of this research, the researcher looked into two types of play,

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<sup>2</sup> Newsdesk, "Visitor Statistics," <http://newsdesk.si.edu/about/stats> (Accessed November 7, 2014).

<sup>3</sup> Lynn D. McRainey and John Russick eds. *Connecting Kids to History with Museum Exhibitions* (Walnut Creek: Left Coast Press, 2010), 21.

<sup>4</sup> Susie Wilkening and James Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*. (Washington, DC: The AAM Press, 2009), 79.

which were game and role-play. These two types of play guided the original question of this thesis.

The research question that guided this thesis was:

“How do game play and role-play, as well as a child’s age affect children’s engaged learning in a history museum?”

The claim that this thesis will defend is:

Play that is motivated by fun and derived from hands-on activities provides children with the drive to utilize new skills such as those that are learned in a museum summer camp.

The two types of play that the research focused on were game play and role-play.

The research conducted throughout the six weeks of camp showed that game and role-play was enjoyed throughout all age groups at the Independence Seaport Summer Camp. Not only did these types of play focused the campers on problems presented to them throughout the activities it engaged them both physically and mentally to ideas, concepts, and roles they might not have been before. This allowed campers to learn and be engaged in history and science related activities. By placing campers at the center of a problem and asking them to take control and dictate which direction to take, it engaged campers in being leaders and trying to use the information presented to them to accomplish the tasks presented to them.

Jill Berkowicz, Adjunct Professor in Educational Leadership at SUNY New Paltz, and previously Director of Curriculum and Instruction at the Spackenkill UFSD in New York and Ann Mysers, Associate Professor and Program Director, Educational

Leadership, Education Director Teachers' College, Columbia University believe that play usually brings happiness to those engaged in its activities.<sup>5</sup> An observer can potentially tell how someone might respond to an activity presented to them or which they are engaged in by their manner or characteristics. Play creates avenues that allow people to act out ideas and learn how to express themselves. Berkowicz and Myers state that, "In childhood it serves as an essential learning process and in both childhood and adulthood it serves as the space in which to wonder, ponder, imagine, and yes, learn. This type of learning cannot be measured on a standardized test; it will be measured by the level of civility, joy, and confidence developed as children are offered space in which to have these incidental learning experiences."<sup>6</sup> As Berkowicz and Myers asserted, play cannot be measured by a standardized test; it is something that is used internally to further our knowledge in areas of our interests.<sup>7</sup>

Since play goes against much of the formal aspect of the educational system, the best place for it to grow and develop is in the informal setting of a museum. Children are the most common users of play in order to grow and develop.<sup>8</sup> Play can open children to new ideas, by allowing them to act out roles and pose problems for them to solve.<sup>9</sup> This

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<sup>5</sup>Jill Berkowicz and Ann Myers, "The Importance of Play," [http://blogs.edweek.org/edweek/leadership\\_360/2014/04/the\\_importance\\_of\\_play.html?cmp=ENL-EU-NEWS3](http://blogs.edweek.org/edweek/leadership_360/2014/04/the_importance_of_play.html?cmp=ENL-EU-NEWS3) (Accessed April 9, 2014).

<sup>6</sup>Jill Berkowicz and Ann Myers, "The Importance of Play," [http://blogs.edweek.org/edweek/leadership\\_360/2014/04/the\\_importance\\_of\\_play.html?cmp=ENL-EU-NEWS3](http://blogs.edweek.org/edweek/leadership_360/2014/04/the_importance_of_play.html?cmp=ENL-EU-NEWS3) (Accessed April 9, 2014).

<sup>7</sup> Jill Berkowicz and Ann Musers, "The Importance of Play," [http://blogs.edweek.org/edweek/leadership\\_360/2014/04/the\\_importance\\_of\\_play.html?cmp=ENL-EU-NEWS3](http://blogs.edweek.org/edweek/leadership_360/2014/04/the_importance_of_play.html?cmp=ENL-EU-NEWS3) (Accessed April 9, 2014).

<sup>8</sup> Sean Brotherson, "What Young Children Learn Through Play," *NDSU Institutional Repository*, 1430 (September 2009): 1.

<sup>9</sup> Pamela Krakowski, "Museum Superheroes: The Role of Play in Young Children's Lives," *Journal of Museum Education* 37 (Spring 2012): 55.

project will look into how much play engages children in history museums through various play activities.

This research was conducted at a summer camp where campers engaged in various play activities. The summer camp took place over six weeks from July to August. Each week had a different theme that highlighted different aspects of topics in history and science. Throughout this process, children completed a camper feedback sheet that collected information the camper felt like sharing about their experience. Through the open-ended feedback questions, campers were able to give their opinion about summer camp activities without fear of ridicule or of being wrong, and they showed in some comments how play had affected their thinking.

A summer camp at a history museum gives campers many opportunities to learn in a variety of avenues. History museums hold and maintain some of the best stories: history itself. However, by the time they reach the age of middle school many students may find history museums “boring”<sup>10</sup> and something they avoid at all cost. This project expected to find that students would be more engaged with information and tasks if they were given the ability to explore and utilize information given to them in the context of play. This research was undertaken with museum professionals in mind. The intention is that the results of this study should be able to be applied to play concepts in exhibits and programming in different ways.

This researcher is claiming that play that is motivated by fun and derived from hands-on activities provides children with the drive to utilize new skills learned in a museum summer camp. Campers are seen to react positively when put in a group setting

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<sup>10</sup> Susie Wilkening and James Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*. (Washington, DC: The AAM Press, 2009), 72.

and learn to work together towards a common goal. Even though there is no end “prize,” campers compete to gain the goal of a win and thus utilize new skills they learned throughout the camp activities.

The Independence Seaport Museum Summer Camp took place over the course of six themed weeks. During those six weeks a normal camp day would consist of rowing for about an hour in the morning, in which the campers rowed or kayaked, played in their own game of splash wars where campers splashed each other using their oars or paddles and tried to get each other and especially the camp counselors soaked. As well as splash wars, campers also played boat tag, and by the time they came in from rowing and kayaking they would be replaying the events of that morning. After rowing and kayaking campers would usually have lunch where they would watch a movie while they ate. They also did this while they had their snack later in the day. Then throughout the day campers took part in tours of the historic ships, tours of the library, activities such as Kubb, scavenger hunts, and MIA to just name some of the other activities.<sup>11</sup> Also on some camp days, demonstrators from other museums such as the Academy of Natural Sciences, the Franklin Institute and Waterworks, would come to the Seaport Summer Camp and put on live demonstrations of topics about things like water filters, the weather, and even the Academy of Natural Sciences brought in live animals. Depending if there was time at the end of the day, campers would be given free time in the museum where they usually played games such as hide and seek.

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<sup>11</sup> Activities mentioned and were not surveyed are located in Appendix 4.

**Summary of the activities:**

1. **Compass Activity:** The first activity was about how compasses work, and ways in which they were used over time by sailors. Children were given compasses and challenged to find different destinations on a worksheet using their compass instrument.
2. **Colony Planning Activity:** Students learned about what factors were important in creating colonies such as Jamestown. Then the campers created their own colony and at the end, they explained why they designed their colony the way they did.
3. **Mary Celeste Activity:** Campers learned about background information pertaining to the mysterious nature of how the ship *Mary Celeste* was found without any of its crew. Campers were challenged during the activity part to explore the historic ship Olympia, which is located at the museum, and then put together clues that lead to a possible explanation about what happened to the Mary Celeste's missing crew, captain, and passengers.
4. **Kraken Activity:** In this activity, students learned about the origins of the kraken. Afterwards took on the role of an artist hearing about the kraken for the first time and drew the kraken based on the description described to them. Then campers explained their own animal without naming it and seeing what sort of monster another camper draws.
5. **Air Pollution Activity:** Campers learned how their daily actions impact the environment in regards to air pollution. Here campers experimented with water and food dye based on different actions they did in their everyday life.

6. **Water Filter Activity:** Campers formed into groups and attempted to create their own water filters, in order to get the best-filtered water. Campers were sorted into groups and they each competed against each other trying to make the best filter and the cleanest water.
7. **What Floats Your Boat:** Campers created their own boats out of tin foil and saw how many small weights they can fit in it by using the concepts of density, buoyancy, displacement and equilibrium. Campers were challenged to create the best boat that could hold the most weights by utilizing the principles of why boats float that was explained to them earlier.
8. **Sailor Tattoos:** In this activity, campers took on the role of tattoo artists and created their own tattoos with their own meanings.
9. **Owl Pellet Dissection:** Campers investigated the remains of an owl pellet and tried to identify animal bones found in the pellet.
10. **Urban Tree ID:** Campers investigated the area around Penn's Landing and tried to identify the different types of trees in their own field journals.

## Chapter II: Literature Review

Play is both an innate and learned activity everyone takes part in since birth. Younger children especially learn the most through play since it is a part of their daily life.<sup>12</sup> According to Dr. Sean Brotherson, a Family Science Specialist, “Play is really the most important way that children learn about the world around them.”<sup>13</sup> As people grow older they look forward to play as a respite from daily life and it usually brings joy to those involved. Play can also be a way to transfer information, as it is a more interactive learning activity. Children often pretend to be certain personas; either they are a firefighter, a conductor, a superhero, or video game hero.<sup>14</sup> Children take information they have acquired through their own interactions and incorporate it into their play. Sometimes children will seek out more information to make things more authentic. Through the use of play and learning in a history museum, participants have the ability to experience greater hands-on learning and enhancing their experiences.

### What is Play?

Play has different meanings to different people, and there seems to be difficulty in coming to a consensus in what it means. Jon-Paul C. Dyson, Vice President for Exhibit Research and Development and Director of the National Center for the History of Electronic Games at The Strong National Museum of Play, writes that there are four identifiable characteristics of play. They are that: 1. Play is voluntary, 2. Pleasurable or

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<sup>12</sup> Sean Brotherson, “What Young Children Learn Through Play,” *NDSU Institutional Repository*, 1430 (September 2009): 1.

<sup>13</sup> Ibid.

<sup>14</sup> Brotherson, “What Young Children Learn Through Play,” 5.



fun, 3. Play is its own end, and 4. Play takes a participant away from concerns of the present.<sup>15</sup> People engage in play because it is something they choose to do and it peaks an interest or curiosity. Some activities that categorize play are described by Professor Pat Power of London Metropolitan University. In “Playing with Ideas: The Affective Dynamics of Creative Play” she states,

Play can refer to a plethora of individual actions or cultural activities. It can include game play, festivals, artistic play, gambling, and sports. It can be organized, structured, or rule bound (as in games). Or it can be spontaneous, unstructured, and playful (as in imaginary or free play). Not all play is playful, and much depends on the attitude and motivation of those involved.<sup>16</sup>

Play encompasses multiple aspects as well as different usages. Most research agrees that there are different types of play for different actions.<sup>17</sup> Dyson also agrees with Powers but narrows down the play to: Pretend play, object play, constructive play, locomotor play, game play, collecting play, language play, parent-child play, outdoor play, and technology play.<sup>18</sup>

Play creates emotions that are important for children in learning. For example Pat Power notes the benefits of play in behavior, when he states, “Behavioral neuroscientists Sergio and Vivien Pellis argue that ‘some motor, cognitive and social skills are improved, directly, by the experience of play,’ but they have found that ‘the primary avenue for the

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<sup>15</sup> Jon-Paul C. Dyson, “Playing with the Past,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaine and John Russick. (Walnut Creek: Left Coast Press, 2010), 139.

<sup>16</sup> Pat Power, “Playing with Ideas: The Affective Dynamics of Creative Play,” *American Journal of Play* Vol. 3, No. 3 (Winter 2011): 288-323.

<sup>17</sup> Brian Sutton-Smith, *The Ambiguity of Play* (Cambridge: Harvard University Press), 1-5.

<sup>18</sup> Jon-Paul C. Dyson, “Playing with the Past,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaine and John Russick. (Walnut Creek: Left Coast Press, 2010), 140-141.

improvement of all skills is via emotional calibration.”<sup>19</sup> Through the emotional benefits of play, cognitive learning, and motor and social skills are increased. Play is an action that creates a positive experience, which teaches children to learn through interaction, and to adapt their behavior to follow the rules of the game or their social group.

Among these different types of play, role-play is the most applicable in history museums, and an example of this is when children play in kitchens or dress up.<sup>20</sup> Daniel Spock who has spent 26 years in the museum field, and 13 of those years at the Boston Children’s Museum, reinforces this position of role-play for children in comprehending the past or a specific situation:

If the emotional/cognitive hook for a child is to imagine what it was like to live in the past, this process is greatly intensified when a child is allowed to move from a relatively passive physical position as a receptor of a story to the active position of being able to enact a role.<sup>21</sup>

Children facilitate learning in their own way by putting themselves in the middle of the story and acting out their own role. Children, teens, even adults, love to transport themselves to another time and become someone new who might be totally different from themselves. A child can be a superhero, while an adult can transport him or herself back to the Civil War era. People use role-play as a form of escape to take on different roles and through this they take away knowledge or develop more of an interest in whatever scenario they are acting out.

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<sup>19</sup> Power, “Playing with Ideas: The Affective Dynamics of Creative Play,” 296.

<sup>20</sup> Dyson, “Playing with the Past,” in *Connecting Kids to History with Museum Exhibitions*, 140.

<sup>21</sup> McRaney and Russick eds., *Connecting Kids to History* 124.

## Theories Behind Play Learning

### *Lev Vygotsky*

Lev Vygotsky was a psychologist and creator of the theory Zone of Proximal Development, which shows how much a child can learn with and without help.<sup>22</sup> Zone of Proximal Development detailed the impact of play on learning as play creates a zone of proximal development because “In play a child always behaves beyond his average age, above his daily behavior.”<sup>23</sup> Play allows children of all ages to act out situations that are different from their current lives, and to develop skills they might not currently have been able to in their daily lives. Through this interactive behavior, children incorporate things they learn in conjunction with their playmates. Vygotsky also points out that through play older children can create their own views between imagination and real life.<sup>24</sup> Sharon Shaffer, the Executive Director for the Smithsonian Early Enrichment Center, states that, “Not only does Vygotsky draw a clear connection between fantasy play and similar symbolic representation with words, he also recognizes imaginary play for its strength in building understanding of the world.”<sup>25</sup> Through role-play children not only gain different perspectives they might not be personally connected to, but can work through their own problems. As Laura E. Berk and Adena B. Meyers, professors of psychology at Illinois State University, talk about play and role-play in their article *The Role of Make-Believe Play in the Development of Executive Function*. They propose that it is through

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<sup>22</sup> Gerry Stahl, “Forward,” in *Engaged Learning with Emerging Technologies*, eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), viii.

<sup>23</sup> Lev Vygotsky, “The Role of Play in Development,” In *Mind in Society*, (1978): 102.

<sup>24</sup> Vygotsky, “The Role of Play in Development,” 104.

<sup>25</sup> Sharon Shaffer, “Cognitive Development and Learning,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaney and John Russick. (Walnut Creek: Left Coast Press, 2010), 37.

play and role play that kids are exposed to challenges and are able to talk their way through it.<sup>26</sup>

### *Jean Piaget*

Jean Piaget a psychologist and founder of the theory constructivism, offers other theories about how play impacts the development of children. Shaffer expands on Piaget, stating, “A child develops knowledge of concepts through a process of assimilation and accommodation.”<sup>27</sup> Through assimilation people process and use information in their own way. Children do this on a daily basis by assimilating what they see and experience through daily life then applying it to play. Role-play for children can begin at first with playing house. Children see what they know, and as they grow older they apply that learning to other experiences.

Children also learn the skill of accommodation through play and concepts associated with it through interaction with other children. Children have to learn the right way of interacting with people in everyday life. This requires learning how to negotiate different etiquettes and concessions when playing or in daily life. In her article, Pamela Krakowski, a faculty member of the University of Pittsburg in the School of Education and part –time educator in the Children’s Studio at the Carnegie Museum of Art, cites that “Piaget theorized that children construct knowledge through active exploration and

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<sup>26</sup> Laura E. Berk and Adena B Meyers, “The Role of Make-Believe Play in the Development of Executive Function,” In *American Journal of Play*, Vol. 6, No. 1 (Fall 2013): 98-110.

<sup>27</sup> Shaffer, “Cognitive Development and Learning,” in *Connecting Kids to History with Museum Exhibitions*, 38.

engagement with their environment.”<sup>28</sup> Play allows kids to explore on their own terms or through the rules of the game they help create. Through play certain situations help children understand the world better.

### *Maria Montessori*

Dr. Angeline S. Lillard, an Associate Professor of Psychology at University of Virginia talks about Maria Montessori’s view of “playful learning,” when she states, “Playful learning is child centered, constructivist, affectively positive, and hands-on.”<sup>29</sup> As previously discussed, play is centered on the child, is engaging the participant in an individualistic way, and creates an emotional, happy response. By saying it is affectively positive, Montessori implies that any kind of play must create a happy emotional response from a child or participant. Maria Montessori also saw playful learning as intrinsic. Lillard explains this rationale when she states,

Montessori originally thought children needed rewards, and she offered them nice toys to play with after they successfully read words. But when she saw children cast aside the toys and request more words to read instead, Montessori came to believe that, under conditions of free choice, learning was its own reward.<sup>30</sup>

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<sup>28</sup> Pamela Krakowski, “Museum Superheroes: The Role of Play in Young Children’s Lives,” *Journal of Museum Education* 37 (Spring 2012): 53.

<sup>29</sup> Angeline S. Lillard, “Playful Learning and Montessori Education,” *Journal of Play* Vol. 5, No. 2 (Winter 2013): 157-186.

<sup>30</sup> Angeline S. Lillard, “Playful Learning and Montessori Education,” *Journal of Play* Vol. 5, No. 2 (Winter 2013): 167.

However, Montessori did not follow pretend play, as she thought children should be given information and kept grounded in reality.<sup>31</sup> Lillard gives the example that, if the child wanted to play house with a pretend mop, then the child should be given an actual mop and do it in real life.<sup>32</sup> Montessori felt that children should have playful and happy experiences, but they should be realistic and give them the skills they would use in real life instead of being in her mind in a fantasyland.<sup>33</sup> The researcher looked into how children from eight to twelve learn and engage with different kinds of play in a history museum summer camp. The research helped to show campers' opinions and reactions to the different kinds of summer camp activities.

### *Howard Gardner*

Learning through play can actually fall into one of the numerous ways of learning of the Multiple Intelligences by Howard Gardner. Howard Gardner is a professor in Cognition and Education at Harvard Graduate School of Education and creator of the theory of Multiple Intelligences. Gardner explains intelligences by stating, "I believe that human cognitive competence is better described in terms of a set of abilities, talents or mental skills, which I call intelligences."<sup>34</sup> This researcher believes, that just like play, multiple intelligences can reflect the different kinds of play and how children learn through them. The nine intelligences that Gardner talks about are Musical, Bodily Kinesthetic, Logical-Mathematical, Linguistic, Spatial, Interpersonal, Intrapersonal, and

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<sup>31</sup> Lillard, "Playful Learning and Montessori Education," 175.

<sup>32</sup> Lillard, "Playful Learning and Montessori Education," 171.

<sup>33</sup> Ibid.

<sup>34</sup> Howard Gardner, *Multiple Intelligences*, (New York: Basic Books, 2006) 6.

the two newest ones: Naturalistic and Existential.<sup>35</sup> Just as there are different kinds of play that coexist with each other, the multiple intelligences do the same.<sup>36</sup> A compass activity can fall into game play and can use the intelligences of Bodily Kinesthetic and Logical-Mathematical. Children use the compass, explore their surroundings, and then also have to measure where they are going. By looking at play through the lens of Howard Gardner's Multiple Intelligences it provides it is possible to see how different aspects of play can allow children to use different skills.

### **Engagement and Play in Museums**

Gerry Stahl, an academic researcher in the field of Computer-Supported Collaborative Learning and an associate professor at Drexel University, states that "To be human is to be engaged with other people in the world."<sup>37</sup> Engagement can be viewed as an extension of play in that it requires personal interaction through social rules of behavior. Stahl elaborates on this by stating,

Vygotsky showed how most learning begins with interpersonal interactions and is only secondarily internalized as individual knowledge. So it is our engagement with other people – whether in our family, tribe, classroom or workplace --- that provides the primary context, motivation and source of new knowledge.<sup>38</sup>

In play, whether people act alone or with a group, it is through this interaction or scaffolding that people also learn from each other. The flow of knowledge is made easier,

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<sup>35</sup> Gardner, *Multiple Intelligences*, 8-20.

<sup>36</sup> Gardner, *Multiple Intelligence*, 8.

<sup>37</sup> Gerry Stahl, "Forward," in *Engaged Learning with Emerging Technologies*, eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), vii.

<sup>38</sup> Gerry Stahl, "Forward," in *Engaged Learning with Emerging Technologies*, eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), viii.

as play can makes social interactions with one another more relaxed, and is a form of communication that everyone speaks.

In the chapter, *Engaged Learning* by David Hung, associate professor at the National Institute of Education (NIE), Nanyang Technological University, Singapore and involved in cognitive and learning science, Dr. Tan Seng Chee an academic staff in the Learning Sciences and Technologies academic group at the National Institute of Education, Singapore, and Dr. Koh Thiam Seng who is an Associate Porfesson in Science Education at the National Institute of Education, expand upon the notion of engaged learning.<sup>39</sup> They state, “In other words, there is active engagement in the learning process when the learners are constructing knowledge from experience through their interactions with peers and teachers to make meaning or to interpret information and patterns observed.”<sup>40</sup> Engaged learning is something that people participate in and helps them facilitate information better through first hand experiences or transfer of knowledge from one person to another. Being an active participant is important because that is the only way to experience the information and in some way shape it for a person’s own interpretation. However, to be engaged in learning, one has to want to learn.<sup>41</sup> This concept correlates with intrinsic motivation.

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<sup>39</sup> D. Hung and M.S. Khine, “About the Contributors,” (Netherlands: Springer, 2006), 276-280.

<sup>40</sup> David Hung, Seng Chee Tan, and Thiam Seng Koh, “Engaged Learning: Making Learning an Authentic Experience,” in *Engaged Learning with Emerging Technologies* eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), 30.

<sup>41</sup> Gerry Stahl, “Forward,” in *Engaged Learning with Emerging Technologies*, eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), viii.



### *Intrinsic Motivation*

According to American educational theorist John Dewey, in order to take away quantifiable information from an exhibit, “It is not about how an individual learns but how the experience contributes to the prior experience of the individual.”<sup>42</sup> This researcher believes that play alone cannot help an individual remember every possible thing about an experience. What play can do is encourage a person to look deeper into the subject matter that caused them this joy to begin with. An enjoyable activity can enhance the continued interest or curiosity in a subject. This encourages the visitor to want to continue the activity or remember information from the experience.<sup>43</sup> Distinguished Professor of Psychology at Claremont Graduate University and founder and co-director of the Quality of Life Research Center, Mihaly Csikszentmihalyi and Doctor of Psychology Kim Hermanson, would call this experience “flow.”<sup>44</sup> Csikszentmihalyi and Hermanson found, “When playing, children pay attention because they want to, because they find the information interesting and important in its own right.”<sup>45</sup> This is because when people are playing voluntarily and enjoying it, they are intrinsically learning. This means they are learning just to learn because they find the information interesting and fun. That is all the reward they need.<sup>46</sup> Flow is created through a state of spontaneity, and

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<sup>42</sup> Tara Henderson and David Atencio, "Integration of Play, Learning, and Experience: What Museums Afford Young Visitors," *Early Childhood Education Journal* vol. 35, no. 3 (December 2007): 245-251.

<sup>43</sup> Mihaly Csikszentmihalyi and Kim Hermanson, "Intrinsic motivation in museums: why does one want to learn?" in *The Educational Role of the Museum*, ed. Eilean Hooper-Greenhill. (New York: Routledge, 2004), 146-160.

<sup>44</sup> Ibid.

<sup>45</sup> Csikszentmihalyi and Hermanson, "Intrinsic motivation in museums: why does one want to learn?" 147.

<sup>46</sup> Ibid.

the general characteristics that create flow are “clear goals and appropriate rules.”<sup>47</sup> Flow is a major part of play when this theory is applied to it.<sup>48</sup> To keep this flow alive and the visitor interested, the visitor needs to be met with challenges that pique their interest and state of mind.<sup>49</sup>

State of mind is important because it can lead to a person to discover new things based on this flow. For example, Csikszentmihalyi and Hermanson state,

In the process, flow activities provide a sense of discovery; we discover things about ourselves as well as about the environment. Flow activities, whether they involve competition, chance, or any other dimension of experience, provide a sense of discovery, a creative feeling of being transported into a new reality.<sup>50</sup>

Flow activities are especially important in a history museum because there are many avenues of history - depending on the institution - a visitor can discover. Discovery is a part of how children, and typically anyone learns. Flow activities are important because they enable participants to think and look deeper into a subject they find interesting in order to find something new.

### *Types of Play: Role-Playing in Museums*

The role of pretend play is important for anyone because it allows them to take on a role they have not had a chance to encounter in real life. In Pamela Krakowski's article

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<sup>47</sup> Csikszentmihalyi and Hermanson, “Intrinsic motivation in museums: why does one want to learn?” 150.

<sup>48</sup> Ibid.

<sup>49</sup> Mihaly Csikszentmihalyi and Kim Hermanson, “Intrinsic motivation in museums: why does one want to learn?” in *The Educational Role of the Museum*, ed. Eilean Hooper-Greenhill. (New York: Routledge, 2004), 151.

<sup>50</sup> Mihaly Csikszentmihalyi and Kim Hermanson, “Intrinsic motivation in museums: why does one want to learn?” in *The Educational Role of the Museum*, ed. Eilean Hooper-Greenhill. (New York: Routledge, 2004), 151.

she states, “Dramatic play, especially the kind that involves dress up and role-playing, allows children to discover ‘who they could be, who they might be, who they want to be.’”<sup>51</sup> This is especially important for children because as they grow older and are starting to look and shape how they want to be perceived as well as what sort of person they want to be. This researcher believes that, by role-playing in museums, especially history museums, children can assimilate information, issues, and stories about the past and see how they apply to them. In discussing role-play in museums, Daniel Spoke states that, “To bring children into imaginative contact with what it was like in as close an approximation as is, if not possible, at least necessary to engross them.”<sup>52</sup> Children want to be engaged in a “fun”<sup>53</sup> way at an exhibition and in an activity. The survey with middle school respondents indicated they wanted interactives, and something to catch their interest. Immersing them in a situation, getting them to play a role and then act on it on their own accord by letting all the power be in their hands, that is what could spark the intrinsic learning for middle school students. Pat Powers indicates that emotionally, students want to find their experience at the museum pleasurable, but still feel safe in whatever pursuits of play or exploration they encounter.<sup>54</sup>

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<sup>51</sup> Pamela Krakowski, “Museum Superheroes: The Role of Play in Young Children’s Lives,” *Journal of Museum Education* 37 (Spring 2012): 55.

<sup>52</sup> Daniel Spock, “Imagination – A Child’s Gateway to Engagement,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaney and John Russick. (Walnut Creek: Left Coast Press, 2010), 131.

<sup>53</sup> Susie Wilkening and James Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*. (Washington, DC: The AAM Press, 2009), 79.

<sup>54</sup> Pat Power. “Playing with Ideas: The Affective Dynamics of Creative Play.” *American Journal of Play*. Vol. 3, No. 3 (Winter 2011): 303.

*Types of Play: Game Play in Museums*

Another type of play that is mentioned in the chapter, “Playing with the Past,” by Jon-Paul C. Dyson is game play. Dyson states that,

Competitive Play is another type of play that often gives birth to game play, in which players compete according to formal rules (although some games, such as games of chance are not primarily about competition.) Museums can invoke this sort of play by creating new games that teach historical content or by giving children a chance to play old games from the time period they are exploring.<sup>55</sup>

Children create and play games all throughout their lives. Play is how children learn to socially coexist and acquire knowledge and experiences they might not have normally had access to. This is also seen in “How a Museum Discovered the Transforming Power of Play,” by Scott G. Eberle, the Vice President for Interpretation at the Strong National Museum of Play. In his article, Eberle talks about how using play and old games brought new life back into the museum.<sup>56</sup> Eberle states about his museum’s collection that, “Toys, games, models, clothing, chemistry sets, paintings, sports gear, trophies, books, t-shirts, and magic tricks, all remind us how we embrace play. Play helps us imagine what’s next, and so, along the way, toys also often reveal who we hope to become.”<sup>57</sup> Game play is another way that helps children relate and imagine what another person’s life is like. Through game play, they can take any role they want, and also learn to follow the rules of the game. The rules not only make children think critically in a situation, but they also

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<sup>55</sup> Jon-Paul C. Dyson, “Playing with the Past,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaney and John Russick. (Walnut Creek: Left Coast Press, 2010), 141.

<sup>56</sup> Scott G. Eberle, “How a Museum Discovered the Transforming Power of Play,” *The Journal of Museum Education*, Vol. 33, No. 3 (Fall, 2008): 265-272.

<sup>57</sup> Eberle, “How a Museum Discovered the Transforming Power of Play,” 271.

create the potential for children to go outside their comfort level and confront new information and ideas.

### **Students and Museums**

James Chung and Susie Wilkening of the market research firm Reach Advisors, conducted a survey sponsored by the Smithsonian Institution on mothers and their children. They state through their research that,

They want active role-playing, with their children playing a part. They want to participate in the activities and even eat the period food and wear the clothes. And they want first-person interpretation because they appreciate how that can engage their children in the story.<sup>58</sup>

While middle school students might want to avoid being included in “childish” endeavors such as dress-up, role-play is ideally suited for their age group. For younger audiences the museum provides scaffolding for children to create an atmosphere that allows them to actively participate in a program or exhibit. Sharon Shaffer, the executive director for the Smithsonian Early Enrichment Center also emphasizes that, “Associations between ideas and experiences play an important role in understanding history and serve as prior knowledge.”<sup>59</sup> When children have the opportunity of correlating what they learned in a lesson or at home with the experience, it makes it easier for children to make sense with

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<sup>58</sup> Wilkening and Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*, 55.

<sup>59</sup> Sharon Shaffer, “Cognitive Development and Learning,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaney and John Russick. (Walnut Creek: Left Coast Press, 2010), 43.

what they learned. History is made clearer with the experience of either acting through it or having some background information as structure.<sup>60</sup>

Another topic they researched was middle school students, and museums. They discovered that, “On the written survey, where their response were confidential, only one in ten [middle school students] said museums were ‘boring.’ Just over half reported that they go to museums at least sometimes.”<sup>61</sup> While Reach Advisers indicate that middle school students like history museums, they still need to be engaged to maintain this enthusiasm. Zoos and aquariums were the top choices for middle school students to visit in this survey and they were followed by science, history, art, and children’s museums.<sup>62</sup> Other responses to the survey included frustration over not being able to touch many of the objects at the museums, an aversion to any kind of work (that has to be done in an activity), and an interest in more interactive activity at the museum.<sup>63</sup> Wilkening and Chung do correlate a list from the survey of what the students like to do for fun: “10. Arts and Crafts, 9. Go shopping, 8. Read, 7. Play video games, 6. Hang out with family. 5. Watch TV/DVDs, 4. Computer/Internet stuff. 3. Go to the movies, 2. Play sports. 1. Hang out/communicate with friends.”<sup>64</sup> Middle school students’ top activity is the social one they have in their daily lives. Also regarding video games, they “are increasingly complex including role-playing, complicated problem-solving and components that

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<sup>60</sup> Sharon Shaffer, “Cognitive Development and Learning,” in *Connecting Kids to History with Museum Exhibitions*, eds. Lynn D. McRaney and John Russick. (Walnut Creek: Left Coast Press, 2010), 43.

<sup>61</sup> Susie Wilkening and James Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*. (Washington, DC: The AAM Press, 2009), 72.

<sup>62</sup> Ibid.

<sup>63</sup> Wilkening and Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*, (Washington, DC: The AAM Press, 2009), 73.

<sup>64</sup> Wilkening and Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*, 74.

players can design themselves.”<sup>65</sup> Video games are a window for kids to take on roles of someone else and experience first-time scenarios, problems, and quests. They allow tweens to take on responsibility especially during an age of transition into becoming young adults. Role-playing confers authority to a group of kids who are looking to be given a chance to act like adults for once and not be included in with activities considered “childish.”

### **Competition and Children**

Competition can play a major role in games. Dr. Cynthia E. Johnson, an Extension Human Development Specialist from North Carolina State University agrees that, for children, competition is one way to grow and learn.<sup>66</sup> Johnson goes on to say that learning to work with others and developing skills are positives that come from engaging in competition with other children.<sup>67</sup> In an area like a museum or a museum summer camp, children can take the new skills they may learn and have the opportunity to try it out for the first time. Competition for younger kids involves playing simple games with rules, while older kids favor the experience of winning in competition and begin to think more rationally or “abstractly” to reach their goals.<sup>68</sup> Various activities in summer camp

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<sup>65</sup> Susie Wilkening and James Chung, *Life Stages of the Musuem Visitor: Building Engagement Over a Lifetime*. (Washington, DC: The AAM Press, 2009) 74.

<sup>66</sup> Cynthia E. Johnson, “Children and Competition,” North Carolina Cooperative Extension Service. HE-404 (May 1993): 1-5.

<sup>67</sup> Ibid.

<sup>68</sup> Cynthia E. Johnson, “Children and Competition,” North Carolina Cooperative Extension Service. HE-404 (May 1993): 1-5.

engaged campers and challenged them to use their skills they learned throughout the six weeks of camp they attended.

### **Children and Summer Camp**

According to the American Camp Association (ACA), “Each year more than 11 million children and adults attend camp in the U.S.”<sup>69</sup> During this time, children step away from the classroom and take a break from their studies. According to the RAND Corporation, a “non-profit institution that helps improve policy and decision making through research and analysis,”<sup>70</sup> summer camps are one outlet to keep children learning after they leave the classroom for vacation.<sup>71</sup> Camps encourage students to engage in different types of learning as they participate in camp activities everyday. ACA goes on to state, “This recommendation is intended to promote comprehensive programs that go beyond ‘drill-and-kill’ instruction and provide students with (1) expanded learning through innovative instruction that accelerates learning and (2) opportunities for enrichment.”<sup>72</sup> Museums are a place that people regularly go to spend their time learning in a different, more open way. Museum activities are usually geared towards a “fun” and engaging approach. Part of a museum’s mission is to engage the visitor enough that he or she will want to come back. If a summer camp can provide children with both the avenue

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<sup>69</sup> American Camp Association, “ACA Facts and Trends,” <http://www.acacamps.org/media/aca-facts-trends> (Accessed April 28, 2014).

<sup>70</sup> Catherine H. Augustine, Susan J. Bodilly et al, “Making Summer Count: How Summer Programs Can Boost Children’s Learning” (Santa Monica, CA: The RAND Company, 2011), 4.

<sup>71</sup> Augustine, Bodilly et al, “Making Summer Count: How Summer Programs Can Boost Children’s Learning” 33.

<sup>72</sup> Augustine, Bodilly et al, “Making Summer Count: How Summer Programs Can Boost Children’s Learning” 33.



to learn but still give children room to discover, it will result in the child leaving with some impact on his or her knowledge. ACA concludes that, “It appears that increased productive learning time on academic tasks leads to achievement gains (or the mitigation of loss) for students.”<sup>73</sup> Since museums are less structured than a classroom students might feel more comfortable learning new thing than they might not have before.

### Summary and Conclusions

Research has shown that through the exploration of play, children can learn through many different pathways.<sup>74</sup> Each person’s experience is different but for some, play is a key ingredient to work out situations and information.<sup>75</sup> In a historical context, play can be used to showcase the past and immerse the visitor into experiences they might not have encountered before. Through these encounters the visitor can look more in depth into subjects they encounter and be able to take away one key idea they found interesting.<sup>76</sup> This one key idea would have intrinsic value to them as they see it as interesting or curious. If one applies different kinds of play in an exhibition and programming, children can be more directly engaged in learning.<sup>77</sup> This research used

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<sup>73</sup> Augustine, Bodilly et al, “Making Summer Count: How Summer Programs Can Boost Children’s Learning” 35.

<sup>74</sup> Pat Power, “Playing with Ideas: The Affective Dynamics of Creative Play,” *American Journal of Play* Vol. 3, No. 3 (Winter 2011): 288-323.

<sup>75</sup> Pamela Krakowski, “Museum Superheroes: The Role of Play in Young Children’s Lives,” *Journal of Museum Education* 37 (Spring 2012): 55.

<sup>76</sup> Mihaly Csikszentmihalyi and Kim Hermanson, “Intrinsic motivation in museums: why does one want to learn?” in *The Educational Role of the Museum*, ed. Eilean Hooper-Greenhill. (New York: Routledge, 2004), 147.

<sup>77</sup> Susie Wilkening and James Chung, *Life Stages of the Museum Visitor: Building Engagement Over a Lifetime*. (Washington, DC: The AAM Press, 2009), 148.

children's first-hand opinion, through a camper survey, that allowed this researcher to see how play impacts children learning experience in a summer camp.

### Chapter III: Methodology

An open-ended survey was used to generate responses from campers in the summer camp. The surveys were created because it was hoped that campers would feel comfortable stating their own opinion about the summer camp activities and what they took away from it in daily life. This researcher accumulated surveys by giving them out after activities when there was available time and the campers could answer them to the best of their ability. The surveys were collected usually twice a week given the circumstances of the week and were geared towards activities that enabled campers to use their problem-solving and critical thinking skills in game and role-playing activities.

#### Rationale

Many history museums today cater more towards the adult population than children.<sup>78</sup> For example, D. Lynn and John Russick point out that,

As adults, we come to view history as something that is researched and composed by others and prepared for us. Adults expect to read or listen to or watch history; we tend to step back and leave the work to the experts. These passive experiences often fail to engage kids who learn in motion and through interaction.<sup>79</sup>

History museums are faced with the challenge of breaking with the traditional way they portray themselves and are trying to cater to many different subsets of people who might come to visit. By using terminology in phrases like, “Bringing history to life” the

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<sup>78</sup> Lynn D. McRaney and John Russick eds., *Connecting Kids to History with Museum Exhibitions* (Walnut Creek: Left Coast Press, 2010), 25.

<sup>79</sup> Ibid.

museum implies that history was a dead topic before.<sup>80</sup> In order to bring more people, especially younger children into the museum and engaged in the exhibits themselves, having play applications with role-play and game play would further the children's learning experience. As Russick and McRainey continue, "Like life, the space would demand participation and invite queries, debate, and discoveries; and most of all, like life itself, every visitor –old and young, experienced and novice – would leave their mark and change the space just because they were there at the moment in time."<sup>81</sup> What is missing in today's history museums is a way to fully engage children in the past. Having games that will totally immerse them in history may cause children to really stop and think about topics they might not have considered before. The museum summer camp allows campers to engage in hands-on activities that would allow them to learn about different activities that deal with history and science. The camp is six weeks long and its campers ranged from the ages of six to twelve. A junior counselor who has aged out of the camp program was also at camp at least once a week to help assist and take part in activities.

An open-ended survey was the primary instrument in gauging what the campers took away from camp and how play might have impacted their learning. The survey was given to the campers after each activity to gauge their opinion and what they might have possibly learned. Michael Quinn Patton, a Doctor of Sociology at the University of Wisconsin, states that "The truly open-ended question permits those being interviewed to take whatever direction and use whatever words they want to express what they have to

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<sup>80</sup> Lynn D. McRainey and John Russick eds., *Connecting Kids to History with Museum Exhibitions* (Walnut Creek: Left Coast Press, 2010), 25.

<sup>81</sup> Ibid.

say.”<sup>82</sup> The direction of this survey helped the children who are partaking in it feel more at ease when answering how they felt about the lessons afterwards. Patton states that opinion questions are,

Questions aimed at understanding the cognitive and interpretive processes of people ask about opinions, judgments, and values ---- “head stuff” as opposed to actions and behaviors. Answers to these questions tell us what people think about some experience or issue. They tell us people’s goals, intentions, desires, and expectations.<sup>83</sup>

Asking open-ended questions that do not lead the child towards a preconceived notion were aimed to get the best and most honest response. Specifically what this researcher looked for were answers that show whether or not campers took away a piece of information based on their experience and how play played a part in it. Also to go along with the observation, a survey of the counselors was also accomplished to triangulate the data recorded by the researcher with what the counselors saw happening themselves.

A second survey was made specifically for the counselors and it was used to record counselors’ observation of the campers. This was used as an instrument in researching the impact of play in engaging children in a history museum. In *Qualitative Inquiry in Clinical and Educational Settings*, Danica G. Hays, an Associate Professor of Counseling and Chair of the Department of Counseling and Human Services at Old Dominion University and Anneliese A. Singh, Assistant Professor in the Department of Counseling and Human Development Services at the University of Georgia, note that “observations are a primary source of qualitative data; they can stand alone as their own

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<sup>82</sup> Michael Quinn Patton, *Qualitative Research & Evaluation Methods*, (California: Sage Publications, 2002), 354.

<sup>83</sup> Ibid.

method or supplement others.”<sup>84</sup> Observation is a key tool in gathering the most information about a topic without any intervention on the visitor’s time and thinking.

Furthermore, Hays and Singh list some reasons observation is a key qualitative tool,

(1) Observations allow the qualitative researcher to better capture and understand the context; (2) they involve more present moments during which a researcher can obtain setting details rather than relying on others’ conceptualizations; (3) participants may not be willing to discuss certain things in an interview, and the researcher can obtain this information only by direct observation.<sup>85</sup>

Hays and Singh believe that observation is appropriate because at times, even people do not even know they are subconsciously learning.<sup>86</sup> People often do not realize certain facts about themselves that an observer can see. For example, it might not appear “cool” for some kids to like history, and so in an interview setting, a child might lie saying they are not interested. However, during an observation it can be seen how a child is engaged in the subject matter. This thesis looked into how play affects children’s engagement in learning. Observation done correctly could capture children’s actions without fear of tampering with their behavior because they know they are being watched.

## Research Team

The first person on my research team is a teacher. She is in her twenties, Chinese-American, who has experience in dealing with children and has observed student’s engagement in the classroom. This teacher has been in a wide variety of school grades from getting her degree in education and has done field work with various grades. Also,

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<sup>84</sup> Danica G. Hays and Anneliese A. Singh, *Qualitative Inquiry in Clinical and Educational Settings* (New York: The Guilford Press, 2012), 223.

<sup>85</sup> Hays and Singh, *Qualitative Inquiry in Clinical and Educational Settings*, 224.

<sup>86</sup> Ibid.

she has been involved in a summer camp for over four years. She has experience both in and outside the classroom with students and their learning capabilities, which made her time reviewing the data, key for noticing any information pertinent to the research question.

Questions for the main observer to keep in mind when watching the campers will be:

- Are the campers alert? - This went towards whether campers are paying attention and following the activity and not day-dreaming.
- Are the campers asking questions?
- Are they responding to any questions asked of them?
- How are they reacting?
- Are the children using critical thinking skills in this activity?
- How much interaction do the children have with one another?
- How much and in which ways are the students explaining what their responses are?<sup>87</sup>

Children around the ages of six to thirteen were observed. This was used to follow the process of many of the camp students and what their actions mean in relation to play learning.

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<sup>87</sup> Ben Johnson, "How Do we Know When Students Are Engaged?" <http://www.edutopia.org/blog/student-engagement-definition-ben-johnson> (Accessed April 15 2014).

## Participants

The participants were summer camp children, between the ages of six to thirteen. They were from the Philadelphia area and many were repeat campers from earlier years. Not all six weeks of camp had the same campers, but there were many repeat campers in the different weeks. The campers' parents pay and sign up the children for camp. Surveys were given out at the end of lessons after the campers have completed everything or the next morning.

## Measures

At the end of the programming the campers and the three counselors were asked to complete the surveys. For example, on the first week, campers were in the education center for an activity about compasses. They were given a small introduction based on what a compass is and how to use it. During this time, this researcher was observing their actions to note what campers were doing in the counselor survey and how they interacted with other campers:<sup>88</sup> Questions about engagement that might come to mind throughout the activity and guided the counselor survey were:<sup>89</sup>

1. How often are students paying attention?
2. How often are they following directions?
3. How often they are writing down notes for their own use?

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<sup>88</sup> Ben Johnson, "How Do we Know When Students Are Engaged?" <http://www.edutopia.org/blog/student-engagement-definition-ben-johnson> (Accessed April 15 2014).

<sup>89</sup> Danica G. Hays and Anneliese A. Singh, *Qualitative Inquiry in Clinical and Educational Settings* (New York: The Guilford Press, 2012), 228.



4. How often are they responding to questions asked?
5. How often are they asking questions?
6. How often are students critically thinking through the activity?
7. How often are the students interacting with one another throughout the activity?
8. How often are students utilizing new skills they were taught in the activity?

These questions added to my research, as it not only allows my observation to be more accurate, it can also serve to supplement any other evidence I collect.<sup>90</sup>

In order to effectively observe the engagement of the summer camp students, it is pertinent that observers remain unobtrusive as possible during the activity.<sup>91</sup> A counselor survey was filled out at the end of the day, providing answers to the survey based on what was seen that day. This way the students were not concerned about the researcher's presence in the activity. This was then replicated the following weeks.

These survey questions were aimed to get as much information from the students about their experience and thoughts on the lesson. In phrasing questions a certain way, it was aimed to draw out information the student might have learned. In one question, by having someone take the role of a student informing their friend in what they missed, it makes the child put himself or herself in the authoritative role and be able to expand on what he or she did in the activity or what might possibly took away from that day.

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<sup>90</sup> Danica G. Hays and Anneliese A. Singh, *Qualitative Inquiry in Clinical and Educational Settings* (New York: The Guilford Press, 2012), 228.

<sup>91</sup> Hays and Singh, *Qualitative Inquiry in Clinical and Educational Settings* 232.

## Demographic Data

The research took place at the Independence Seaport Museum. It is a medium-size museum and has a summer program for about six weeks with interchanging themed activities throughout those weeks. Campers participated in activities that gave them basic information and then engaged in play activities. Surveys were distributed to a group of no more than twenty campers per week.

## Procedure

The researcher observed activities with the summer camp students from July to August. The data was collected twice a week, for six weeks. This was done over ten activities in which the researcher taught activities and handed out surveys so that it did not disturb the campers' normal routine and the campers did not worry about being observed.<sup>92</sup> As the researcher is part of the camp, there was no disruption in the activity. After the activity, the researcher handed out the camper feedback surveys and the counselor survey to attain additional information.

## Validity

External validity is attributed to whether the research can be generalized.<sup>93</sup> External validity is achieved because when one takes out the particulars, and yet, a researcher can still use this model to test engagement in a subject and activity. External

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<sup>92</sup> Stephen G. Jurs and William Wiersma, *Research Methods in Education: An Introduction*, (Boston: Allyn and Bacon, 2009), 284.

<sup>93</sup> Jurs and Wiersma, *Research Methods in Education: An Introduction*, 7.

validity is also controlled for the time of the week by conducting surveys at the beginning and the end. In addition validity is controlled for content by repeating surveys on two different weeks with two different themes. The campers' opinion was different in their surveys on how they learn and throughout the six weeks of camp some campers will be repeat campers while others will not.

### **Triangulation**

One form of triangulation of the research pertains to the participants. Hays and Singh describe it as “Involving several participants representing a similar perspective, having multiple roles within a setting, experiencing a phenomenon in various ways yet possessing similar characteristics, and so forth.”<sup>94</sup> The students were all from the metropolitan area, but they also arrived with different learning styles, backgrounds, and prior experiences. Each of the three counselors had some background in education, whether it is in the museum or in the school setting. However, because one researcher has more formal training in classroom teaching than the other, it strengthened the validity of the surveys when all three were in agreement. Another form of triangulation is the times when the camper feedback was given. Since the research is utilizing different times and weeks, it created data showing how play is engaging children by being more active rather than passive with the material. This researcher discovered that these different factors reinforced the data supporting children having clear engagement with the material.

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<sup>94</sup>Danica G. Haya and Anneliese A. Singh, *Qualitative Inquiry in Clinical and Educational Settings* (New York: The Guilford Press, 2012), 209.

**Prototyping**

This thesis's instruments were prototyped by sending them to students of the Museum Education Program at the University of the Arts and to educators at the Independence Seaport Museum. The instruments were given feedback from many different perspectives, thus allowing a thorough critique of the instruments.

## **Chapter IV: Presentation of the Data and Conclusion**

### **Introduction**

The research was conducted over a six-week period during the months of July and August 2014. The ten activities that were surveyed included Compass, Colony Planning, Mary Celeste, Kraken, Air Pollution, Water Filter, What Floats Your Boat (WFYB), Sailor Tattoos, Owl Pellet Dissection, and Urban Tree ID. A total of 42 campers were surveyed throughout the 6 weeks, and a total of 86 surveys were collected. Role and Game-Play were a focus in the activities and it was found that these types of play were well received by all campers. Children were not broken up into age groups; instead they participated in all the activities together. Some children were repeat campers throughout the summer, so they were surveyed more than once. The data collected was all qualitative, so campers' responses were coded. Depending on the question, campers' answers could be coded more than once. Quotes used in the data section were all taken directly from the camper surveys. The surveys allowed the campers to provide feedback on their experience from the camp and what they might have learned from the play activities.

The Independence Seaport Museum Summer Camp took place over the course of six themed weeks. During those six weeks a normal camp day would consist of rowing for about an hour in the morning, in which the campers rowed or kayaked, played in their own game of splash wars where campers splashed each other using their oars or paddles and tried to get each other and especially the camp counselors soaked. As well as splash wars, campers also played boat tag, and by the time they came in from rowing and

kayaking they would be replaying the events of that morning. After rowing and kayaking campers would usually have lunch where they would watch a movie while they ate. They also did this while they had their snack later in the day. Then throughout the day campers took part in tours of the historic ships, tours of the library, activities such as Kubbb, scavenger hunts, and MIA to just name some of the other activities. Also on some camp days, demonstrators from other museums such as the Academy of Natural Sciences, the Franklin Institute and Waterworks, would come to the Seaport Summer Camp and put on live demonstrations of topics about things like water filters, the weather, and even the Academy of Natural Sciences brought in live animals. Depending if there was time at the end of the day, campers would be given free time in the museum where they usually played games such as hide and seek.

The activities surveyed over the six weeks of camp were chosen by their game play and role-play qualities. Role-play activities had qualities that allowed campers to on a different persona. Campers could be explorers, scientists, and even artists in activities like Colony Planning, Owl Pellet, Urban Tree ID, Sailor Tattoos, Air Pollution, and Water Filter. Game play was seen in activities like Compass, Mary Celeste, Kraken, Water Filter, and What Floats Your Boat. These activities were used to see how play affected the campers' experience at the summer camp.

### **Summary of the activities:**

1. **Compass Activity:** The first activity described how compasses work, and ways in which they were used by sailors over time. Children were given compasses and challenged to find different destinations on a worksheet using their compass.

Whichever team is able to get to the entire team to the correct destination first, wins the game.

2. **Colony Planning Activity:** Students learned about what factors were important in creating colonies such as Jamestown. The campers then created their own colony and at the end, they explained why they designed their colony the way they did.
3. **Mary Celeste Activity:** Campers learned about background information pertaining to the mysterious nature of how the ship Mary Celeste was found without any of its crew. During the activity campers were challenged to explore the historic ship Olympia, that is located at the museum, and put together clues that lead to a possible explanation about what happened to the Mary Celeste's missing crew, captain, and passengers.
4. **Kraken Activity:** In this activity, students learned about the origins of the kraken. A kraken was a many-armed creature, what can be today known as a giant squid. It could reach as high as a sailing ships main mast, and would attack ships by wrapping their arms around the hull and capsizing it and killing the crew. Afterwards campers took on the role of an artist hearing about the kraken for the first time and drew the kraken based on this description. Then campers explained their own animal without naming it or seeing what sort of monster another camper drew.
5. **Air Pollution Activity:** Campers learned how their daily actions impact the environment in regards to air pollution. In this activity campers experimented with water and food dye based on different actions they did in their everyday life.

6. **Water Filter Activity:** Campers were formed into groups and attempted to create their own water filters, in order to get the best-filtered water. Teams of campers competed against each other trying to make the best filter and the cleanest water.
7. **What Floats Your Boat:** Campers created their own boats out of tin foil and saw how many small weights they can fit in it by using the concepts of density, buoyancy, displacement and equilibrium. Campers were challenged to create the best boat that could hold the most weights by utilizing the principles of why boats float that were explained to them earlier.
8. **Sailor Tattoos:** In this activity, campers took on the role of tattoo artists and created their own tattoos with their own meanings.
9. **Owl Pellet Dissection:** Campers investigated the remains of an owl pellet and tried to identify animal bones found in the pellet.
10. **Urban Tree ID:** Campers investigated the area around Penn's Landing and tried to identify the different types of trees in their own field journals.

### DEMOGRAPHICS OF CAMPERS

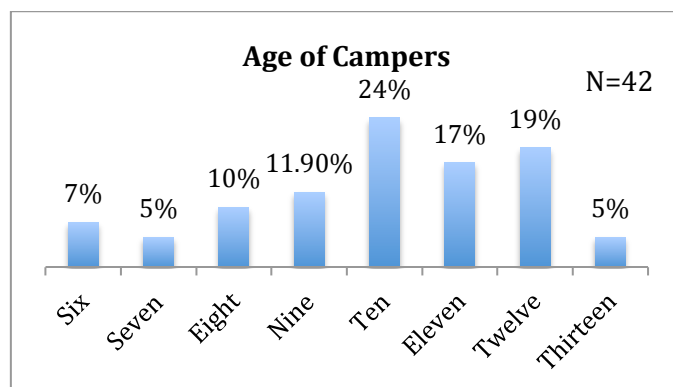


Figure 1: Age of Campers in the Six Weeks of Camp



In the six weeks of camp that took place between July to August, a total of 42 campers were surveyed. Out of the 42 campers surveyed, the most common age throughout the camp was ten while the ages of seven and thirteen had the least amount of campers at 5%. During activities, campers were not separated due age, instead all ages learned together.

### CAMPERS AND THE ACTIVITIES

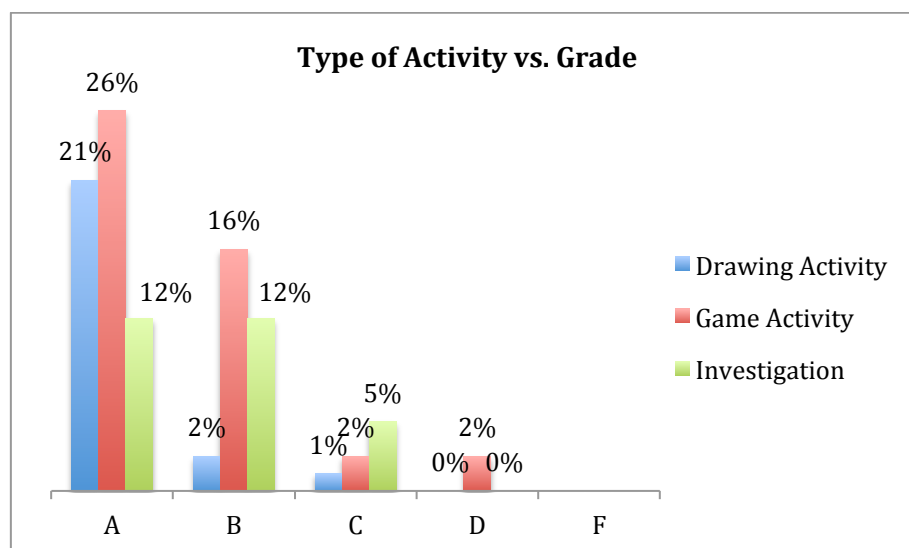


Figure 2: Types of activities compare to grades they were given.

The activities surveyed were: Compass, Colony Planning, Kraken, Mary Celeste, Water Filter, What Floats Your Boat, Air Pollution, Sailor Tattoos, Owl Pellet, and Urban Tree ID. These activities were then grouped into the categories of Drawing, Investigation, and Game. These categories were chosen to narrow down which kinds of activities the campers liked. Drawing and Investigation activities highlighted role-play, while Game activities highlighted Game play. The activities asked campers to think for themselves, solve problems, and at times, to work together in groups. The grades given by the campers showed that the children enjoyed across all ages the two types of play: role and

game play. It was found that across all age ranges, the campers enjoyed game and role-play. The campers loved the camp and showed it through the grades they delivered. From the youngest to the oldest camper, they all enjoyed and participated in game and role-play that were showcased in the three categories made: Drawing, Investigation, and Game Activities. These three activities allowed the campers to get hands-on experience, which placed the campers at the center of a problems and enabled them to solve questions and problems presented to them.

Drawing Activities are an example of campers using their skills and competing as teams, as well as working together to create images that included their own tattoos, colony maps, and monsters. Role-play had a main role in this type of activity. The campers usually took on the role of artist as they were tasked in these activities to create monsters, colonies or their own tattoos. Drawing activities were Sailor Tattoo, Kraken, and Colony Planning. Investigation activities were programming that enable the campers to take on different roles, such as scientists, and investigate different experiments, problems, and questions. Investigation activities such as these had students working on their own and thinking critically about certain science-related activities. Investigation activities include the Owl Pellet Activity, Air Pollution Activity, and Urban Tree ID. Game Activities included programming that created competition among the campers in an effort to both work together and compete against one another. Under Game are Compass, Mary Celeste, Water Filter, and What Floats Your Boat. All the Game activities except WFYB involved campers being put into teams and trying to win different challenges to be the first to win. WFYB involves just a solo competition that allows campers to try to make the best boat that held the most weight.

Out of all the activities, Game Activities came out with having the most A's at 26%, with Drawing Activities being second at 24%. Game Activities especially have competition as a factor. Drawing Activities had some aspects of competition at times, such as in the kraken activity where campers were drawing. Campers began on their own drawing a kraken from a description. However, afterwards campers were put into groups and competed by having to describe to a fellow camper how to draw the physical characteristics of a specific animal. Campers tried to see who could finish first and compared afterwards which drawing had the best likeness to the real thing. Game activities directed campers towards specific goals and presented campers with problems they must solve. Drawing, Investigation, and Game activities were all hands-on and challenged students to think critically in an activity.

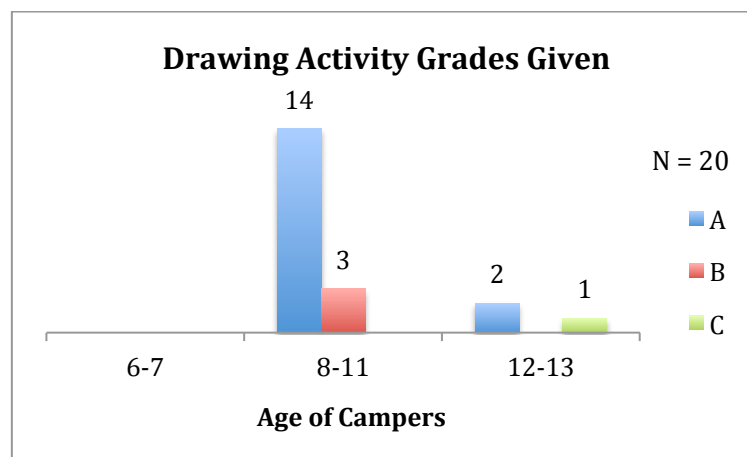


Figure 3: A graph of the grades given in Drawing Activities.

There were a total of 20 campers surveyed during the Drawing Activities. The Drawing Activity category seemed to be favored the most by those in the 8-11 age category.

During Drawing Activities such as Kraken, Sailor Tattoos, and Colony Planning, campers

were mainly in teams in all but Sailor Tattoos. While in teams they were able to work with friends to create either their own colony in Colony Planning, or compete in creating drawings like in Kraken. Campers seem to like these activities as the 8-11 years old gave them the most As, with 14, and the 12-13 year olds gave this category the next most As, with two. Howard Gardner could even say these activities made campers use their spatial intelligence, because, “spatial problem solving are brought bear in visualizing an object from different angles.”<sup>95</sup> Children are imagining objects, creatures and people and interpreting them in different ways. In the Colony Planning Activity, children imagined and created their own colony plan, while also incorporating information given to them. In the Kraken and Sailor Tattoos Activities, children are taking from their own imagination and drawing sea monsters. Children who are more creative might enjoy these activities more than other activities, as they get to create their own version of someone or something. Another type of role-playing activity was Investigation activity where campers took on the role of a scientist.

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<sup>95</sup> Howard Gardner, *Multiple Intelligences*, (New York: Basic Books, 2006) 14.

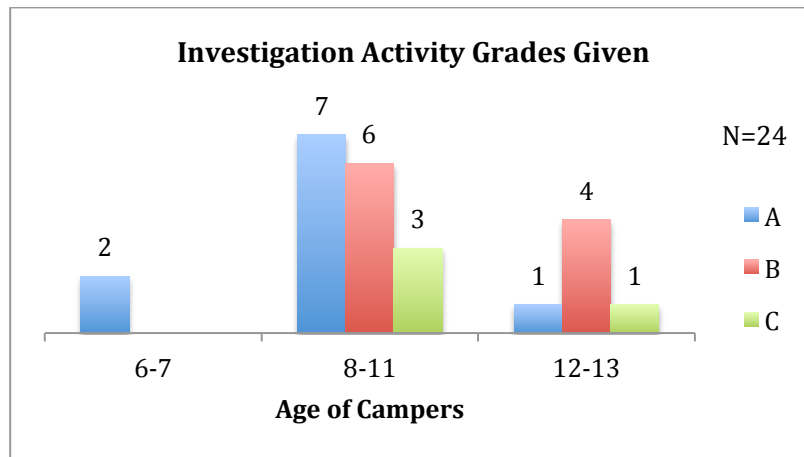


Figure 4: A graph of the grades given for Investigation Activities.

During Investigation Activities, 24 campers were surveyed. These activities involved experiments that campers took part in during the camp. The 8-11 age group gave the most A's at 7, while a B was an average answer for both older age groups. This chart shows that both older groups liked experimental activities. In the three activities listed, campers got to use their critical thinking skills and be hands-on. In the Owl Pellet activity, campers were able to uncover what owls actually ate by identifying which animal bones were in the owl pellets. In Urban Tree ID, campers were able to explore the outside by learning about what kind of trees live around them, and in Air Pollution, the campers were able to see first-hand what they do in everyday life that could cause pollution. What should be noted is the increase in B grades, especially with the 12-13 ranges. While As were still graded high in Investigation Activities, the data shows an increase in B grades given compared to Game and Drawing activities. This could be because these experiments were not as fast-paced as the Game Activities were. It is important to note, however, that campers were still enthusiastic about the activities as shown below.

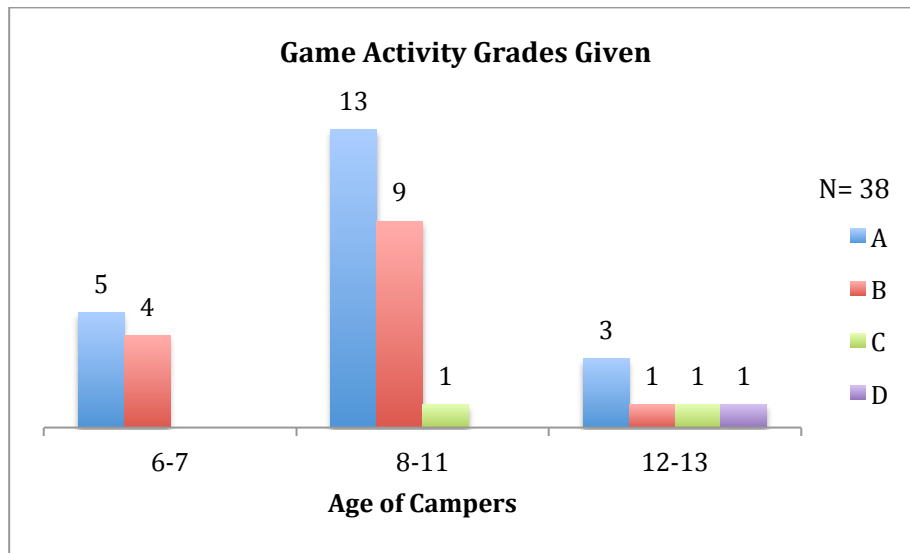


Figure 5: A graph of the grades given for Game Activities.

There were 38 campers surveyed. Game Activities received the most with good grades from all the ages. This category was especially a good example of competition and hands-on activities also coming into play with some of the activities. In these activities: Compass, Mary Celeste, Water Filter, and What Floats Your Boat (WFYB), all but WFYB involve teamwork and trying to reach an end before other groups using skills they might have just learned. These hands-on activities challenged campers to find their way using their own compass, searching the historic ships for clues about the Mary Celeste, creating and testing their own water filter, and designing their own boat that can float the best. In all of the grades given by the campers, they gave the highest grades in A's and B's showing that they like activities that challenge them and allow them to be hands-on allowing them to figure out the solution for themselves.

### CAMPERS' OPINIONS ON THE ACTIVITIES

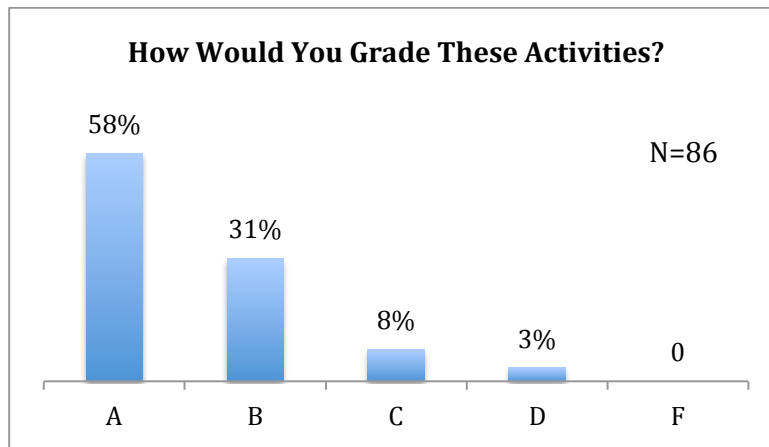


Figure 6: All of the activities in the six weeks of camp grouped together.

On a grade range from A to F, the campers were asked to grade activities throughout the summer camp. Ten activities were conducted and 86 surveys were produced from a total of 42 campers surveyed throughout the summer camp. The grades were then sorted into these groups. The grade most awarded was an A at 58%, which shows that most of the campers really enjoyed the activities in the summer camp. The campers would then proceed to explain in the survey why they awarded a specific grade to an activity, and why they did or did not like specific types of activities.

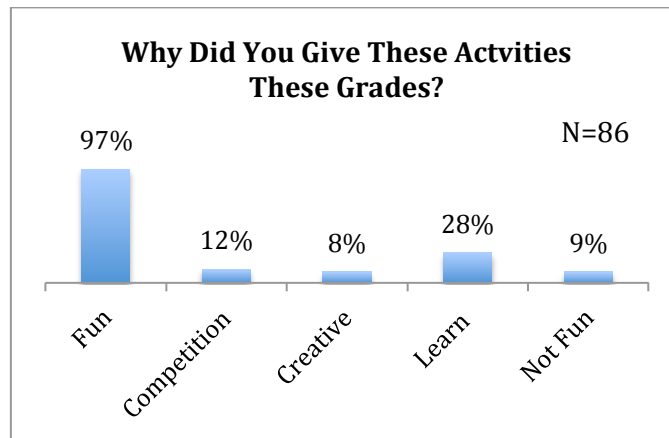


Figure 7: Camper explanations of why they gave activities specific grades.

Campers were asked to explain why they graded the ten activities the way they did. Each activity's response was then coded and combined into categories. These answers could be sorted into more than one category. This is because campers could state at times that they enjoyed the activity and it was "fun" and that they either liked that they won (competition), enjoyed being creative, and also could state just what they learned that day. In response to this question, the campers' explanations were coded in the following categories: "Fun," "Competition," "Creative," "Learn" and "Not Fun." The majority of the campers at 97% graded camp activities based on how much fun they had during them. If they did not enjoy the activity, they might have given it a lower grade. Since this is a summer camp, campers come expecting an exciting and more informal atmosphere. The second highest category in the grading is Learn, which shows that campers are taking away new information, as well as having an enjoyable time at the camp.

If the activities were not hands-on and allowed the campers to engage in a project of some sort, these grades and reasoning might have been different. This is seen in the two types of play that were highlighted in this research: role and game play. These plays are hands-on and the data suggests that these types of play were well received by campers



in the grades that were given to the activities. These activities, as well as being hands-on, were always active and had the campers moving and interacting either with each other or the activity. Campers highlighted that they enjoyed the activities because 58% of campers gave activities good grades. If campers did not enjoy the activity they might have given it a lower grade. Since this is a summer camp, campers arrive expecting an exciting and informal atmosphere. The second highest category in the grading is Learn, which shows that campers are taking away new information, as well as having an enjoyable time at the camp. When a person has a bad experience, all they will remember is the bad experience. However, since the campers enjoyed the activities surveyed at the camp, they showed this enjoyment through the high grades they gave to the surveyed activities. Campers placed a high regard to being able to enjoy an activity above all else. If their experience did not live up to their idea of enjoyment they would grade it low. While if they did enjoy the activity, they would give it a high grade and would be more inclined to remember the activity because it is something they want to do and are interested in.

All activities were hands-on and as the data suggests these activities are more engaging than having that campers sit and watch an activity. The campers liked to be engaged and active, which is why “fun” and “learn” are the top two categories. According to campers’ responses, these categories allowed them to take charge in an activity, and to learn and explore new ideas and skills. This was seen in the “Learn” category as campers stated at times what they learned and how they used those skills in the activity, in “Competition” when campers stated they liked winning the activities themselves, and in “Creative” because some found they enjoyed being able to create their own designs and ideas.

### **Examples of Campers' Answers in the following categories:**

An example of "Fun" is:

-It was fun because I didn't realize air was that dirty because you can't see it normally but can see it because of the water. – Ten-year-old boy camper in the Air Pollution Activity survey.

An example of "Competition" is:

-It was really good because our water had no dirt at all. Our water was lighter [in color after filtering] so I think it was pretty good. – Six-year-old boy camper in the Water Filter Activity survey.

Campers were split into groups and tasked with trying to create their own filter. After being given the information about how filters work, each team competed to make the best filter that could produce the cleanest water. Campers judged to see which filter produced the cleanest water.

Examples of "Creative" are:

-It was fun to be creative and make a town. – A ten-year-old boy camper in the Colony Planning Activity survey.

-I would grade the activity an A because it was a fun activity and very creative and I love creative stuff. – An eleven year old girl camper in the Colony Planning Activity survey.

Examples of "Learn" are:

-It wasn't that exciting but it was fun to learn how much everyday things pollute our air. – A ten-year-old boy camper in the Air Pollution Activity survey.

-This activity is quite fun and it teaches about owls and their diets. – An eleven-year-old boy camper in the Owl Pellet Activity survey.

-I gave it a B because it was interesting learning about the Mary Celeste and I got to tell my dad about it. Because of the way it was found, that's why I like it. – A ten-year-old girl camper in the Mary Celeste Activity survey.

Example of “Wasn’t Fun” are:

-I didn’t like it because it was boring. Because you would make something and you would destroy it. I don’t like destroying things that I make. - An eight-year-old boy in the What Floats Your Boat Activity survey.

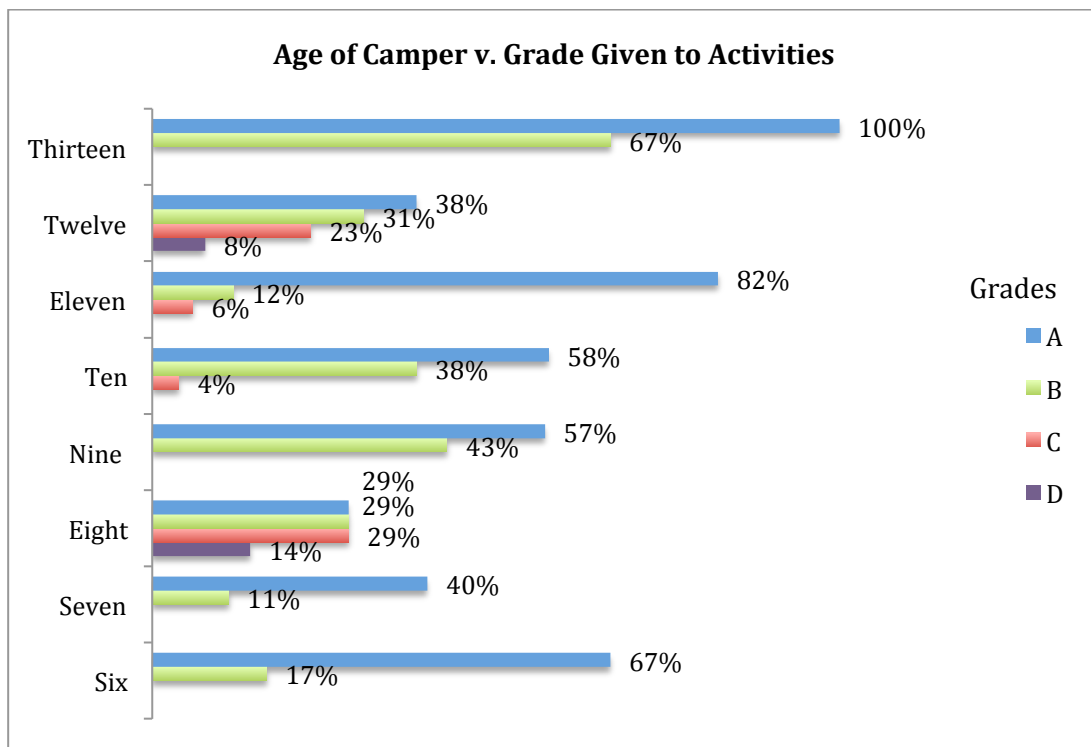


Figure 8: What grades the campers gave out at different ages.

For the entire six weeks of camp, the lowest grade given out was a D. Two Ds were given, one by an eight-year-old and another by a twelve-year-old for two different

activities. The twelve-year-old gave a D to the water filter activity because he said it was not fun. However, in observation he was seen wanting to try again with his group to make a better water filter. The eight-year-old gave a D to the What Floats Your Boat activity because he said he “likes making things and he doesn’t like destroying what he made.”

The varying ages and responses to the activities show two different desires in activities. This researcher believes that the twelve-year-old was not as satisfied with perhaps the slower pace of an experiment or might not want to show his interest in something like that because of his attitude which counselors observed as being “too cool.” Instead since he is older, his survey reflected his wanting to distance himself from such an activity by stating the activity was “boring.” In this regard his social concerns took precedent over his outwards engagement in the activity. According to the counselors, the twelve-year-old later showed eagerness to complete the activity again. He wanted to make a better water filter over the other teams. This showed his true feelings about the activity and wanting to compete in it again. The eight-year-old was more concerned about his boat rather than how he looked doing an activity. In this regard he did not care about the competition but just his own creation. The two campers show different level of engagement in campers that might be due to their age. The twelve-year-old did not want to appear engaged in the experiment but wanted to try to create a better water filter after the activity was over. The eight-year-old was more concerned about his own creation, rather than what the other campers were doing.

This shows again that intrinsic pleasure is needed when learning. Just like whenever a person has a bad experience it will be he or she later tells friends, which can also be seen in learning. If the camper believes that the activities are boring or they did

not enjoy them, it was reflected in the grades they gave the activity. Across all age ranges, the campers enjoyed learning through game and role-play as it is seen in the grades given by the different age campers. Campers graded the activities based on their level of enjoyment and it is reflected in the high grades given by each age group. When campers do not like an activity, they will make it known through the survey and which grade they decide to give the activity. This is a summer camp, not a classroom, and campers expect to enjoy their time at the museum and not be worried about tests. In this regard the level of enjoyment takes precedent amongst anything else.

Eight-year-olds had varied responses over the six weeks of camp. This could be because they were in the middle of the age ranges, so they might be a little more critical of certain activities. The older campers were engaged in the hands-on nature of activities that allowed them to decide the direction they wanted to take. While the younger campers enjoyed hands-on activities also, older campers helped them sometimes. The eight-year-olds were usually at the stage where they did not need help from the older campers, but would try to finish activities their own way. This might be why the eight-year-olds who responded to the survey had such varied responses since they are in the middle of growing and were still trying to figure things out on their own. The correlation between why campers gave certain grades and the ages are shown just further.

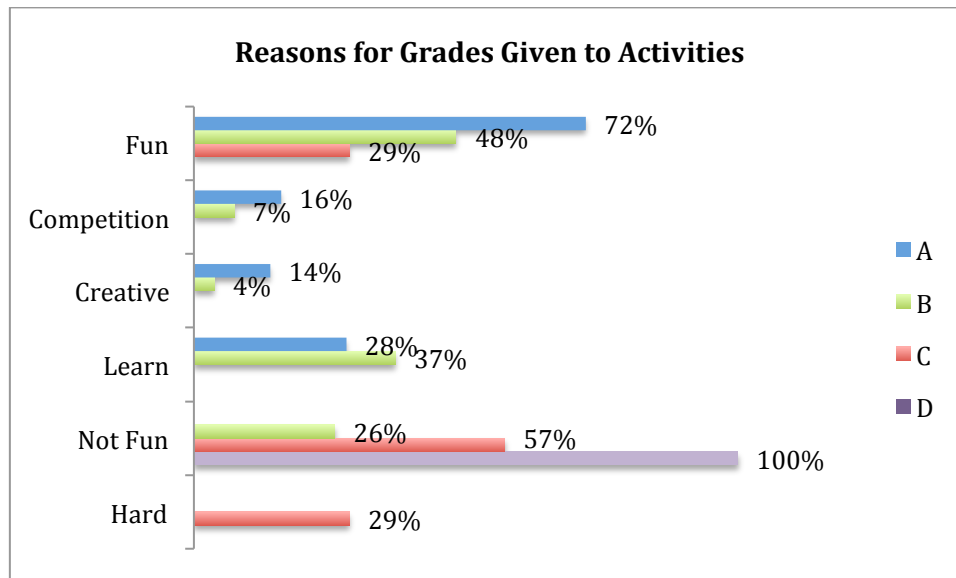


Figure 9: Reason for Grades Given to Activities

The most popular reason in giving an A to an activity was whether it was fun to the campers at 72%. Learning comes in second at 26% for getting an A. Campers would give activities lower grades if they did not find the activity “fun.” The lowest grade in this study is found to be a D, and it was only given twice. Since this is summer camp, and not a school, campers come in expecting a more relaxed atmosphere. Campers want to have fun when they come to the museum and respond the best to activities that seem to enable campers to learn in a “fun” atmosphere. The third highest category was competition.

Many campers said in their surveys that they liked activities because they won. Thus when campers were allowed to pick their team, the activity they were engaged in became more enticing as it allowed the campers to strategize who were on their team. Campers wanted to be on teams with their friends and with people who they knew could win. They showed this in their excitement when they could pick teams and in their disappointment when counselors put together teams. One ten-year-old camper said in his

survey, that he gave the What Floats Your Boat Activity an A, because “It was fun to learn how stuff can affect boats, like tipping it, and to see how long you can make your boat float.” This camper liked the activity because it was hands-on, making his own boat out of tin foil and then testing it using ideas the counselors and campers had talked about beforehand. Another example of how learning is highlighted by hands-on activities and what campers say is “fun” was in a survey about Air Pollution. Another ten-year-old camper explained he gave the activity an A, since “it was fun because [he] didn’t realize air was that dirty because you can’t see it but you can see the pollution because of the water [In which campers put color dye in the water whenever they did an action in their lives that caused air pollution]. By putting children in hands-on type activities it places them first hand in a problem and challenges and guides them to get from Point A to Point B. The campers in WFYB wanted to make the best boat, and in order to do so had to listen before and create a boat using the guidelines discussed in what makes the best boat. Campers take pride in making something that works the way they want because they were presented with a problem and they take it as a personal challenge. This is reflected later in when they talk about the activities as when they enjoy an activity because it allowed them to be hands-on and try out a new concept. They are also excited to learn something new and take pride in what they did in an activity. Incorporating learning in a hands-on way enabled campers to try out ideas and skills they just learned previously, allowed them to enjoy the activity and take away what they call a “fun” experience.

### WHAT CAMPERS WOULD SHARE WITH FRIENDS

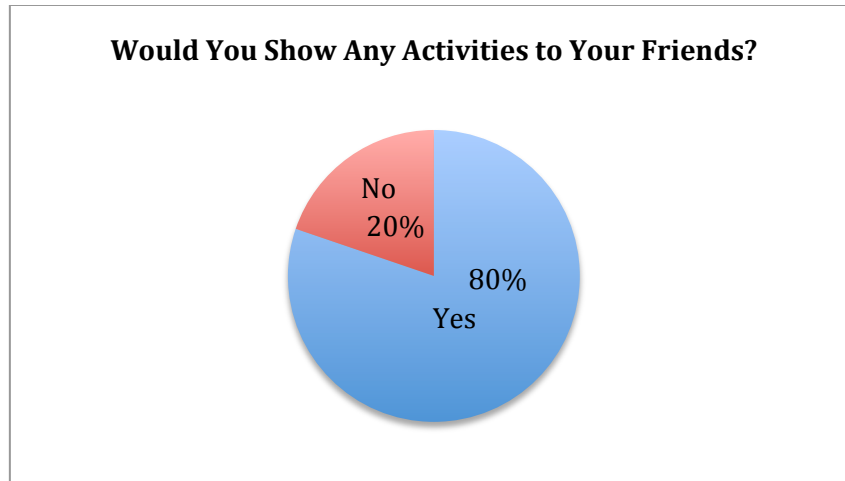


Figure 10: Whether campers would show their friends activities that were done at camp.

Students demonstrated by a majority of 80% that they would show a friend the activities they engaged in at camp. These activities are all encompassing, which mean it includes everything from rowing and kayaking, exploring the two historic ships at the museum, and all the activities that took place at the camp.



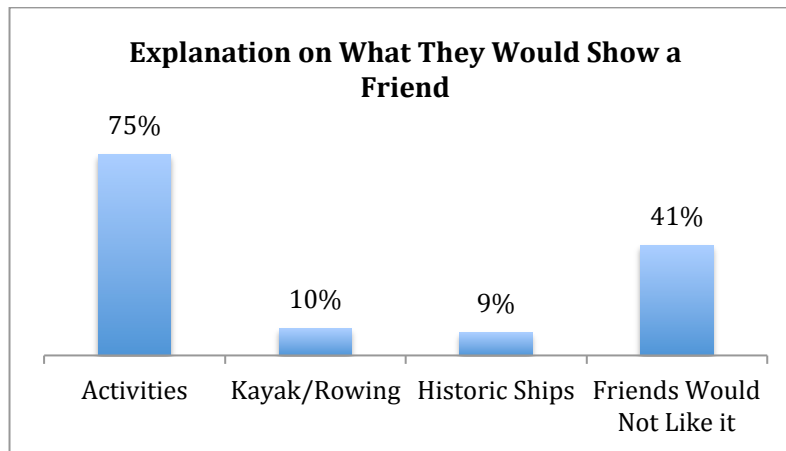


Figure 11: Why campers would show their friends.

In the camper survey, campers picked more than one activity that they did at camp to show a friend. The Campers Survey showed that many of the activities played at the camp, such as activities that were not surveyed, like Pollination Tag, Kubbb, Squid Dissection, and Clay Coil Pots they would want to show to friends either when they returned home or in school.<sup>96</sup> Campers also mentioned showing their friends rowing and kayaking on the water as well as exploring the two historic ships at the museum: a World War II submarine and a cruiser that fought during the Spanish-American War. However, the main reason campers stated why they would not show their friends certain activities at camp in their surveys even if they enjoyed it was because their friends would not like it. Most of the campers enjoyed the activities in camp, but the only aspect that would deter them from showing a friend would be if their friend would not consider the activity fun. It is especially important to note what they would tell their friend- which is what they learned and experienced that day.

<sup>96</sup> Appendix 5 contains the information on these activities.

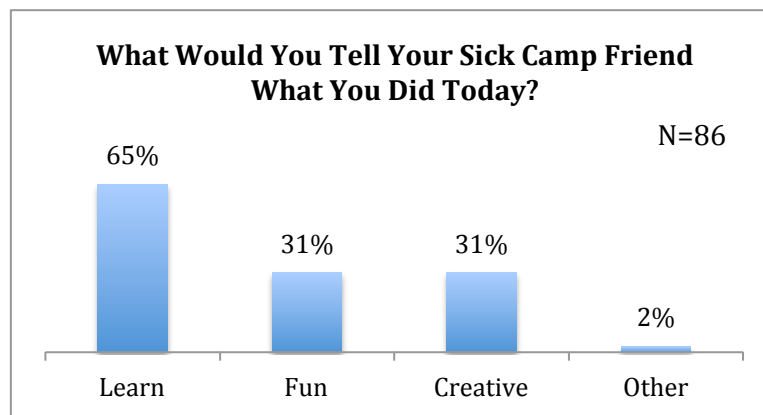


Figure 12: Campers' response to what they would tell their sick friend about camp that day.

This open-ended question's responses were grouped into categories of what Campers' experienced in "Learn," "Fun," "Creative," and "Other." These categories were made from the responses of the campers' survey that were most prevalent. Out of all the answers given, 65%, of the campers would tell their friends what they learned that day at camp. This graph shows that campers sometimes do not correlate having fun and learning at the same time. Some campers did state in their surveys that they thought the activities were fun and that they had a good time. Many of the campers did state at 65% what they learned and what they actively participated in that day. The campers would not have remembered what they learned in camp if they did not enjoy it. This is because campers come to camp to enjoy the experience, and it is not like school where they are tested on the information. Instead by showing that they remember the activity it is an example of intrinsic pleasure.<sup>97</sup> Campers remember and could talk about what they learned because they were genuinely interested and/or enjoyed the overall activity. Campers showed that

<sup>97</sup> Mihaly Csikszentmihalyi and Kim Hermanson, "Intrinsic motivation in museums: why does one want to learn?" in *The Educational Role of the Museum*, ed. Eilean Hooper-Greenhill. (New York: Routledge, 2004), 146-160.

they enjoyed the activities through their grading, and it is surprising that learning took precedence in this category, rather than stating that they just had fun. While some campers did state they had enjoyed the activity at 31%, others went directly into what they learned which showed that learning something new was the most important thing to tell their friend. In this way the campers possibly did not connect the two, but it is inherently shown in campers' wish to tell their friend what they learned and accomplished when their camp friend was gone.

Campers wanted to tell their sick camp friend what they missed, especially if it was an activity they felt was cool and allowed them to take part in something first-hand. Sometimes campers would explain that they did a fun activity, explained what they learned and how they solved the problem that was presented to them in that activity. For example, campers were able to explain how they can spot a certain tree from the Urban ID activity. Campers in this activity were presented with their own field journal and resources that enabled them to identify trees. Campers then could utilize these new skills and characteristics and in this case, take on a role as a scientist trying to identify trees in their field journal.

Instead of talking about having splash wars in the basin with the other campers and counselors, they talked about the activities and what they did in them. They told their sick friend what activities they took part in and what they did, and explained them at times. The campers could have also mentioned they played hide and seek during their free periods, whether it was in the museum or on the two historic ships. The fact that the campers chose to talk about the activities instead of just playing around with their friends for a majority of responses show that campers appreciated and enjoyed the activities and

what they might have learned over any free play they did throughout the day, including tours, movies during lunch, or whenever a special guest came to do a demonstration.

### **Examples of Campers' Answers in the following categories:**

#### **Learn**

-We had to draw a town and it needed stuff like a water source, stores, schools, houses and more. – A ten-year-old boy camper in the Colony Planning survey.

-We went to the Olympia looking for clues. No one found the crew, just the ship. No one ever found out what happened and we had to come up with what we think happened and the ship was called Mary Celeste.” – A nine-year-old girl camper in the Mary Celeste Activity survey.

-We went to different trees, figured out what they were, taped leaves to a booklet and rubbed crayons in the booklet to make bark marks and wrote down the name of the trees.

#### **Fun**

-I would tell them that we did a fun water filter activity with a lot of ingredients and the water turned yellow and it was really funny. - A ten-year-old girl camper in the Water Filter Activity survey.

-Today was fun and we made boats and it would be better if you were there. We were trying to figure out which boats could hold the most weights and how. - A ten-year-old girl camper in the What Floats Your Boat Activity survey.

#### **Creative**

-That they missed out on a lot of fun because we got to make our own tattoos.

– A ten-year-old boy camper in the Sailor Tattoos Activity survey.

### Counselors' Observation of the Campers

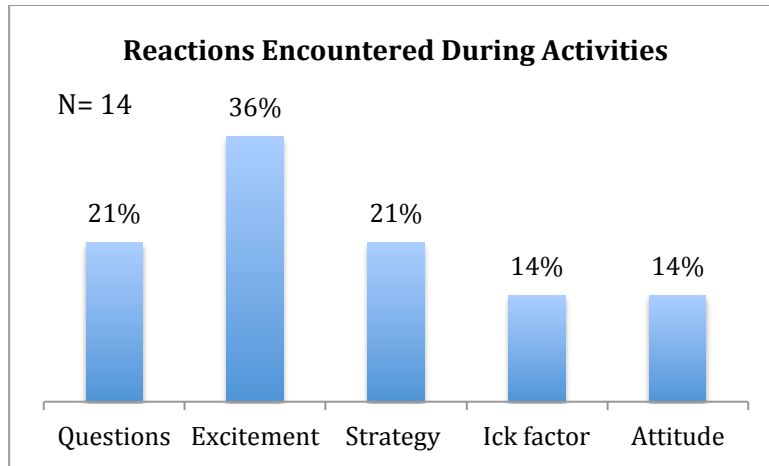


Figure 13: Counselors' observation of camper reactions encountered during activities.

Counselors observed campers' reactions to activities throughout camp. The reactions were grouped together and coded into these five categories: "Questions," "Excitement," "Strategy," "Ick factor," and "Attitude." This is a qualitative question, and the answers were coded from counselor surveys. The graph equals more than 100% because counselor observations could be counted more than once in some categories because counselors sometimes observed more than one reaction at a time.

When encountering new activities for the day, counselors noted that campers were excited for them at 36%. Counselors observed that campers were excited, which was exhibited by campers' general increased interest in activities. Campers were excited about either being introduced to new ideas and challenges that come with activities as well as the historic ships. The two historic ships were key tools used to educate campers about maritime history. Campers always seemed excited to visit the ships in activities, as they loved to traverse the two structures to learn information they might not have known before. Campers were always interested in learning about new ideas and being able to try

out new skills. This was seen in the excitement campers showed when they were told they were going to be on the historic ships and also in all the questions they asked counselors about the Olympia and Becuna afterwards. The fact that these activities were also hands-on added to campers' excitement because it meant they were able to explore new concepts presented to them. This was important because campers' excitement lead them to ask many questions about concepts and skills they are unfamiliar with.

The category "questions" means that the counselors said campers actively asked questions throughout the exhibit wanting to know more information and possibly help. "Excitement" marked the campers attitude to activities they found "cool" and interesting. "Strategy" marked the campers planning and working together to formulate their own plans in activities. "Ick Factor" marked when campers found something gross and unpleasant and could not find a way to get past that aspect of the activity. One example of this was the Owl Pellet activity where some campers found it so unpleasant that they could never get over their own feeling of being grossed out about the owl pellet and enjoy the activity. "Attitude" marks when campers did not want to participate or be engaged as much in an activity because they felt like it would make them look like a young child. Counselors' general comments were that older campers sometimes acted "too cool" for some activities.

The ships were seen as exciting for campers as they are the ultimate hands-on activities, allowing the campers to take away what they want to learn from the ships. Campers could form their own questions about the two historic ships or later investigate when they return home. Campers could explore and experience the ships themselves and discover for themselves their favorite part of the ship. Being able to see and explore the

historic ships caused excitement in the campers because the campers were able to experience history first hand in the way they explored the ships.

### **Examples of Camp Counselor Survey Observations**

#### **Questions**

The children asked a lot of questions and seemed very interested in the lessons. – Counselor Survey from the Mary Celeste Activity

#### **Excitement**

They seem to especially like the ships and going on the submarine to explore. They are all very excited to be on it.  
- Counselor Survey after the Mary Celeste Activity.

The campers had to explore the ship throughout this activity and bring back answers to questions about the ship in order to get the next clue about the mystery of the Mary Celeste.

#### **Strategy**

The kids tried to be strategic in developing their colony in some respects. Whether it was over where the walls went against an attack or where the town stores went.  
-Counselor Survey in the Colony Planning Activity.

#### **Ick Factor**

Some [campers] thought the water filter activity was gross, they reacted vocally and loudly. – Counselor in the Water Filter Activity Survey.

#### **Attitude**

Some [campers] say it's boring but ask to do it [the activity] again. – Counselor in the Water Filter Activity Survey.

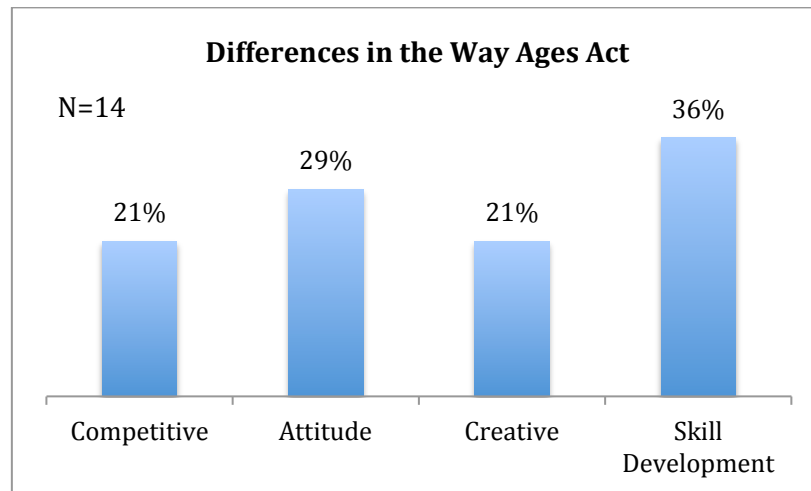


Figure 14: Different ways in which the ages acted.

During the six weeks of camp, counselors were asked how campers acted differently in the activities. When counselors talk about older campers they are usually addressing campers ten and older. Younger campers in this data are considered as under ten years old. These observations could be counted more than once in the coding process. Thirty-six percent of campers reacted to activities differently because some were more interested in an activity or they were able to complete it easier than other children. Some children had an easier time with activities because of their age and how they had developed skill wised. For example, some children in the What Floats Your Boat activity found it easier to make a foil boat according to certain characteristics the campers had talked about, while other campers had trouble creating a foil boat at all. During this time, counselors noted that while campers were put into groups for many of the activities, it was found that many campers liked helping each other. This could be an example of Vygotsky's scaffolding, in which campers who were more familiar with activities or were more able



helped out those campers who might have been younger.<sup>98</sup> This also shows that skill development for campers is different. For example, a seven-year-old camper learned how to make a better boat while watching the older kids design their boat, and an eight-year-old camper struggled to make a simple boat of his own. Some campers were able to make their own boat easily in the WFYB activity while some of the younger campers had a difficult time connecting some of the ideas they had just learned. By watching other campers and talking to each other about how they made their boats, campers were able to develop better and sturdier boats by their second or third try. However, as the campers were grading and evaluating the activities, it was essential for them to enjoy the activity, not just be able to complete it. This is seen in campers' overall grading of the activities as campers placed a high priority on enjoying the activity whenever they graded activities.

Counselors observed Skill Development the most at 43%. Skill Development refers to disparities in ability between ages and how some did better than in activities than others. At this age campers learned and engaged differently in activities. This is based on campers' engagement for a specific activity; specifically how older and younger campers reacted.

- The younger kids had a tougher time making the boats.
- Camp Counselor during the What Floats Your Boat Counselor Survey.

The competitive category includes how some kids became more engaged in an activity when there was a prize or sense of competition added to the game.

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<sup>98</sup>Gerry Stahl, "Forward," in *Engaged Learning with Emerging Technologies*, eds. D. Hung and M.S. Khine (Netherlands: Springer, 2006), viii.

-The kids were more engaged when there was a prize. –  
Camp Counselor in Mary Celeste Counselor Survey.

-The older kids were more engaged in being the first to  
finish. – Camp Counselor in Mary Celeste Activity.

The attitude category refers to how older kids around the age of twelve were sometimes observed by counselors as being “too cool,” meaning they acted stand-offish and not engaged in certain activities because they thought they might have been too old for them.

Activities in which these actions took place include drawings ones such as tattoos.

- Older kids acted like they were "too cool" for the majority  
of the activity. – Camp Counselor in the Water Filter  
Counselor Survey.

The creative category refers to how some campers took a creative approach to an activity.

This means that campers were really engaged in decorating and drawing in a specific activity. These include younger kids liking sailor tattoos or older kids really taking pride and decorating their Urban Tree ID booklet.

-Older kids took more time in trying to make the booklet  
look pretty and creative. Younger kids were just engaged  
– Camp Counselor in the Urban Tree ID Counselor Survey.

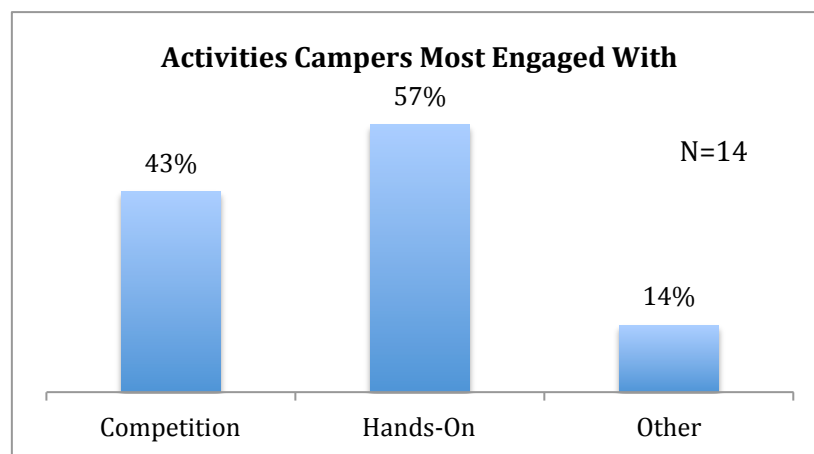


Figure 15: Activities that the campers were most engaged with as regarded by counselors.

This was an open-ended question that took the responses of counselors who explained which activities campers were most engaged in, in regards to interests and then responses were coded with these terms: Competition, Hands-On activities and Other. Counselors could tell campers' engagement by their level of interest in the activity. Some activities could incorporate more than one answer. The two types of play, game and role-play, all were a key part in the ten activities graded and allowed campers to get hands-on experience. Game and role-play placed campers at the center of a problem and allowed them to actively take on a role in finding a solution to any problem presented. Campers' engagement is shown through their enthusiasm in the activity and also their level of participation. In this regard, hands-on activities excited and engaged campers because it allowed them to take control and figure out for themselves problems presented to them. It is one thing to show a camper something, but if a camper is presented with a problem and asked to address it, campers will try their best to solve it.

Competition refers to the many times when the campers were engaged in scavenger hunts both in the museum and on the historic ships. Specifically this involved game play activities where campers were either competing individually or with a team to achieve a goal or to solve a problem. This also refers to any team activity throughout the summer camp. Counselors reported that, once activities became competitive many of the older campers who might be "too cool" to be engaged in an activity took part. Hands-On activities means activities that campers are actively engaged in and are taking part directly in, such as owl pellet dissection. The category of "Other" might include activities that involved campers using critical thinking skills and teamwork. Counselors noted that hands-on activities at one point are very popular with campers. For example, one

Counselor stated during the Water Filter Counselor Survey that in “[In] Water Filter they all were eager to find out if the water would be clean or not. They were all participating.” Hands-On activities allow campers to be engaged directly in activities or experiments, as they play a key part in finding the solution to a given problem or challenge. The activities were then put into different defining categories that looked at breaking down which kinds of activities the campers found most appealing. These categories of activities would be broken down into Game, Drawing, and Investigation.

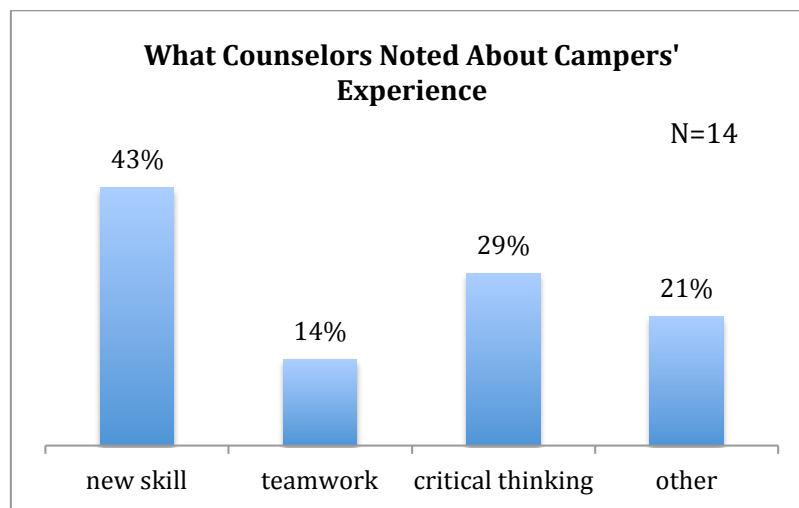


Figure 16: What counselors noted about campers' experiences.

Counselors observed in their surveys that campers were excited by aspects of activities that introduced them to new skills at 43% and were able to utilize them in that current activity or later on in a different one. This also adds to critical thinking because the campers were using their new skill in an activity that encourages them to think for themselves, while also working together as a team. In the Water Filter Activity, campers

were presented with the needed ingredients to make their own water filters. They were then tasked in separate teams to put together a water filter using new information given to them and also use their own critical thinking skills in putting together the best possible filter. This is amplified by the sense of competition between teams as they all wanted to make the best filter out of the groups. Counselors also noted that throughout the six weeks of camp, when campers encountered new activities and ideas, they were engaged with learning something they did not know before or wanted to add on to their current knowledge about a specific topic. Campers then proceeded to explain in their surveys what they would tell a sick camp friend they did that day.

### **Data Conclusions**

This research looked into how game and role-play as well as a child's age affected children's engagement in a history museum summer camp. It was found through open-ended surveys that generally age was not affected, but that campers enjoyed both game and role-play activities at the museum summer camp. Campers as well as camp counselors were interviewed about the campers' experience at the summer camp through open-ended surveys. Role and game play transcended all age groups and gave campers an incentive to learn because these types of plays placed campers at the center of a problem, giving them hands-on experience in an activity and allowed them to use information, concepts and skills learned in summer camp activities in an enjoyable way.

### **Camper Survey Data Conclusion**

During the summer camp, campers voiced their opinion through the camper survey that they enjoyed activities that allowed them to have what they felt was fun. This is seen in the 50 A's given as a grade; 72% of them were given because the campers considered the activity as "fun." It was always essential that camper perceived activities as enjoyable and that the activities were able to showcase information they had not known before or would want to learn further about. Out of all the graded categories, the categories of "fun" and "learn" always persisted to be the top subjects that campers noted when distributing grades. Campers all worked together in activities and from the youngest at six to the camp counselors at thirteen, all campers enjoyed and learned through game and role-play that were highlighted in Game, Investigation and Drawing Activities.

Campers who were shown an activity that allowed them to be hands-on and to learn something new were more likely to use a new skill they had just learned. Campers enjoyed being put in a situation and being the ones to dictate which direction they wanted to go. Instead of sitting in a classroom all day listening to a teacher lecture all day, the campers are put directly into a situation and given a task to complete. Counselors call these activities not lessons because the activities involve the campers to participate in them, not just be a passive participant in them. The point of hands-on activities is for children to be actively engaged, whether physically or mentally in a subject and have them want to do participate and finish an activity. Campers then remembered the activities and took away information and skills based on what they learned because of their own intrinsic enjoyment and interest. This intrinsic interest is showcased when information is brought up in other circumstances, such as a guest demonstration from other museums. Another example of this is when counselors stated in their survey that when the Waterworks visiting presenters came to the museum and did a water filter demonstration of their own, the campers were able to relate their own experiences previously of making their own filters and what they used to create their own.

Activities were broken down into three groups to show what campers thought about specific kinds of activity. These three groups were Drawing, Game and Investigation Activity. Game activities drew on game play, which meant activities campers competed in, to achieve a goal and finish problems that are presented to them. These activities challenge campers to think critically and at times work together with other campers to either find their way to all the right locations in the Compass Activity, piecing together what happened to the Mary Celeste based on the clues campers

collected, working as a team to make the best water filter, and being able to create a boat that could hold the most weights. The grades that the campers awarded showed that they did enjoy these kinds of activities. In the 38 surveys collected from Game Activities, 21 surveys presented these kinds of activities with an A. This could show that campers appreciate the sense of competition and being presented with a challenge they must complete before a certain time. In these activities, campers would have to use the new skill or information just presented to them as they tried to solve the problem that was given. Campers have to get from Point A to Point B and in order to do this they have to use the information, skills, and concepts they learned. Campers want to get the right answer because they see it as a point of pride, especially when there is no other prize of getting in first place and gives campers what they call “bragging rights.”

Drawing and Investigation Activities were role-play activities that enable campers to take on the role of an artist or scientist. For example, in the Kraken, Sailor Tattoos, and Colony Planning Activities, campers took on the role of an artist. In Owl Pellet, Air Pollution, and Urban Tree ID Activities, campers took on the role of a scientists as they investigated what kind pollution they cause in daily life, what sort of food an owl eats, and which types of trees are around the area. In Drawing Activities there were 20 surveys collected and 16 surveys produced by campers were awarded an A grade. In the 24 surveys collected from Investigation Activities, ten A’s were awarded. Role-playing activities such as these allow campers to take on different types of persona and pretend they were an artist in historical time, an architect in the colonial ages, and a scientist today investigating certain truth about the world around us. These two types of activities, Game and Role-Play allowed campers to learn in different ways, by allowing them to be



hands-on in activities and thus enabling them to try out new ideas they had learned just before the start of the activity. This researcher found that campers enjoyed both types of activities by awarding them high grades, and marking that in many cases, they had fun and that they learned something that day.

When asked what they would tell their friend, 65% of campers would tell their friends what they learned today out of all the categories. Out of the 86 surveys given during the camp, 41% of them who said activities were fun, also told their camp friend who was sick something that they learned today. Instead of inherently telling them that they just had fun, almost half of the campers were able to talk about what they learned. This shows that even though campers are not saying they are having fun to their friends, they are showing their interest in what they did by remembering and explaining the activity and information they gathered during the day.

Campers come to summer camp expecting an informal and enjoyable environment. Campers expect no tests, lectures, and pop quizzes when they come to camp and are most engaged in activities that allow them to choose their own course when trying to complete an activity. While the campers could have talked about having splash wars in the basin, hide and seek in the museum, or touring the museum archives, they instead talked about the surveyed activities and what they did in them. Campers were excited to go rowing and kayaking and always enjoyed splash wars, so it was surprising when they were asked what they would tell their sick friend they talked about the activities they engaged in more than anything else. This shows that campers placed more importance on what activities they took part in and what they might have learned in it. Children want to learn and it is showed in the survey results when they talk about what

they did. Campers showed they do enjoy learning when the experience is done in an enjoyable and “fun” way for them. Children wanted to come to camp to have an enjoyable experience, but they are also interested in the unknown and history and science presents them with a variety of avenues to investigate.

This researcher believes through observation and the data collected, that children need an atmosphere of informality and to be able to take direct part in an activity, because they are then more inclined to remember and retain new information presented to them. A majority of the activities that were graded with the letter grade of an A, was because it was dubbed “fun.” Campers’ feedback also showed a second reason they graded an activity high was because they learned something new that they did not realize before. It is through this environment of enjoyment and allowing children to be hands-on in activities that enables them to thrive and be engaged in topics they might not have had access to before. Children play all their life and it is through play that children learn. As they grow older, this does not change because it is through people’s enjoyment and interests that leads them to want to learn. Sometimes children do not correlate learning with fun. Other times they need play as a window to learning because it is through play that makes learning more accessible and engaging to children and as the data suggests, this does not change as they get older. The campers enjoyed game and role-play activities that were presented to them, and this is shown in the grades given as the campers were allowed to be hands-on in learning all throughout the summer camp.

### **Counselor Survey Data Conclusions**

One of the most important parts about counselors’ observations are their awareness of campers’ positive reactions to hands-on activities. Counselors’ observed

that 57% of campers enjoyed hands-on activities in the summer camp. One counselor survey observed during the Water Filter Activity that, “They were all eager to find out if the water would be clean or not. They were all participating.” Campers wanted to fully participate in the activities. Campers not only wanted to observe an experiment; they wanted to be able to control the direction of it. Theorist John Dewey is summed up in Tara Henderson and David Atencio’s article, *Integration of Play, Learning and Experience: What Museums Afford Young Visitors*, that “Learning is an act of participation.”<sup>99</sup> Children learn by doing and actively participating. In the Water Filter Activity, the campers were actually excited to see who had the cleanest filtered water. They took pride in what they invented and achieved. Not only did hands-on activities allow campers to engage in utilizing new skills and information they just learned, it allowed them to think on their own, and work towards a goal. Instead of being stuck in a classroom, children are working either together or by themselves towards a goal and that placed a better incentive for children to try and complete tasks. Being able to work together with other children in an environment children find enjoyable gives them an extra incentive to use information obtained from activities and try to solve problems they find engaging. Game and role-play put children in the driver’s seat and aim them in the direction to solve problems and questions that have never been presented to them before.

While the campers’ age ranged from six to thirteen, with camp junior counselors also included in camper surveys, the campers all worked together at times to get through activities. Not only that, but 36% of the campers were always excited for activities,

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<sup>99</sup> Tara Henderson and David Atencio, "Integration of Play, Learning, and Experience: What Museums Afford Young Visitors," *Early Childhood Education Journal* vol. 35, no. 3 (December 2007): 245.

especially those that enabled them to visit the two historic ships located at the museum. Being able to go on the ships excited the campers because they were able to explore on their own at times, not just being led on tour. This way the campers were able to discover information on their own, and then form their own questions and observations.

Another example of this was in the compass activity. In the counselor survey, one counselor stated that the “newness engaged the kids more if they hadn’t used one [a compass] before.” In this instance, a camper was engaged and used the compass because it was new and allowed them to discover how to get from Point A to Point B by themselves. If there was one camper who knew how to use the compass the best, they were the lead person of the activity and would show their partner how to best use the compass. Many times campers would be seen counting out the steps together that dictated how many feet each objective was from each other. This allowed campers to work together to figure out which was the right way to use the compass and which was the right direction to go.

Each activity the campers took part in enabled them to take control of their own experience in the activity. This is because the activities campers took part in were hands-on. These activities allowed them to dictate which direction they wanted to work towards. Campers especially liked this because it bestowed upon them responsibilities they might not have had before and had them take on the role of leader at times. This is especially important if campers are just used to sitting in class all day, because now they are given direct responsibility to lead a group or challenged directly to get from one point to another, and this drives campers to want to learn and get the correct answer. Campers want to do their very best in this regard because now it is a point of personal pride in

wanting to find the right answer for themselves or for others relying on them in their group, and also to continue to feed their own curiosity. Whether it was a problem they are trying to solve in some game or a role they took on, campers decided which direction they could take. Each child learns and plays differently. At the summer camp game and role-play crossed all age lines, as the campers showed they enjoyed and learned from these types of activities by the grades the campers gave to them. Campers enjoyed activities that were more game play and the campers were engaged in competition with each other. Some activities were more artistic or creative, while other activities were more investigative and allowed the campers at times to think and discover the answer to activities on their own or with a team. In the end, 41% of campers responded in their survey in both grading the activity and what they told their sick friend, is that in activities they enjoyed they also seemed to have learned much about the activity that day.

## **Chapter V: Application to the Field**

Data was extensively collected in the six weeks of camp, surveying both campers and counselors. The researcher is hoping the data will be used to help inform the museum where the camp took place and also engage children visiting other history museums. For the museum where this research was specifically conducted, the findings will help museum educators see what is and what is not working at the summer camp. It also allows the museum to see which kind of play children are drawn towards at different ages. The data found that most of the campers, and especially older ones found game activities or game play engaging and that they learned from them. The activities that seemed to help the campers use new skills are the ones that were hands-on and at times allowed campers to both work together. New skills were acquired through hands-on activities that enabled campers to really engross themselves in an activity. It was found that hands-on activities through game and role-play allowed all campers, no matter the age, to be engaged and learn from these camp activities. This thesis was aimed at museum professionals in order to create programming and exhibitions that make history more accessible and enjoyable to visitors. Many people find history boring and are biased towards history at a young age. In order to make history more accessible and enjoyable to people, it is important to first make history and learning enjoyable to children. It is important to get children interested in subjects like history or science in museums because it is at this stage that children are most curious and are making decisions about what interests them and where they want to go to further these interests, such as a museum. This thesis was aimed to also museum professionals how museum summer

camps are key tools in teaching children in a more informal manner but still show that children are learning in an environment that promotes play.

To get through an activity such as the Compass Activity, campers had to be able to read a compass and figure out the way to the correct destination. All the campers were able to complete the Compass Activity even if they had little experience with a compass. This showed that when presented with an activity and a challenge to finish an activity before other groups, campers would utilize the new skill they learned and at times work together with their partner to make sure they were using the compass correctly. When campers can directly engage in an activity, it allows them to fully participate in it and thus allows them to use and see first-hand information and skills they just learned. Museums can provide programming that enables children to get directly involved in an activity. By allowing the camper to direct which way they go in an activity and allow them to at times make mistakes, it will help them utilize a new skill that was shown to them in the museum. Children want to be given more responsibility and feel pride when they are able to achieve a solution to a problem or manage to get the right answer to questions presented to them.

Counselors observed that competition activities were another type of activity that engaged campers. Many of the activities, as well as being hands-on had elements of competition to them. Many times, campers were paired up or placed in teams and the prize they worked towards was pride of winning. When campers were asked if there was a prize, and they only found it was coming in first, it still made them want to win for the title of being first. However, to come in first campers needed to listen and used skills that they had learned from their counselors. Competition is another key way for campers to

not only learn, but also help each other. In the Mary Celeste Counselor Survey, one counselor stated that, “The older kids took care of the younger kids, so they wouldn’t fall behind.” Many times, the older campers wanted to win, but they also took into account that they had younger campers in their group. This dynamic could make children be more prone to think about what they are doing and thereby use the skills they just learned. By encouraging children to work as a team it made children think about everyone’s role and what was the way to get the best outcome. This was especially seen in the Water Filter activity as campers debated at times how to make a water filter. Educators should implement educational programming that allows children to do hands-on activities and work as a team.

Being on a team made campers at times talk through their differences and come to an agreement. Teamwork also allowed campers talk about the new information they had received. A counselor stated in the Counselor Survey about the Colony Planning Activity, “When put in a group, they were more engaged. Campers worked together and talked through how they wanted to make their colonies.” Teamwork in hands-on activities allows children to utilize information they just learned and be able to help teammates by working towards a goal. Thus educators can provide an avenue for scaffolding between the older and younger children.

The three categories that were established through this research were: Drawing, Investigation, and Game. The three categories were all well received by campers throughout the six weeks of camp and showed that many of them enjoyed learning through these three ways. The three categories also encapsulate the two types, which were highlighted in this research: game and role-play. These types of play crossed all age



ranges, and this is reinforced by the high grades given in each of the activities categories. Educators should incorporate different types of play and learn to mix them throughout their programming as this can help children learn in different ways. Drawing, Investigation, and Game activities allowed children to learn hands-on and thus can be utilized in museum programming, and not just in history museums. These three activities also encouraged campers to think for themselves as they were faced with the task of putting together the information they encountered either in programming or in an exhibition. This researcher proposes that educators can also combine these categories because at times different types of play intersect with each other and children learn in various forms. Depending upon which kind of subject a museum is trying to engage children in, these three activities can allow children to encounter information in various forms, whether it is through taking on a role of a scientist or artist or competing towards a goal in a game.

It was discovered that 41% of campers graded an activity high based on the enjoyment of an activity and that they would later tell a sick camp friend what they missed that day. This was discovered through comparing the best answer for why campers graded activities a high grade and that what campers learned was the best answer they gave to their sick camp friend. It is important for educators to always keep play in mind for whatever activity they choose. This researcher has observed that play is a gateway to introducing children to new concepts and skills. Children can sometimes have aversions to learning something new. However, when learning is placed in the right context such as the informal setting of a museum, it can provide programming that inspires children to think on their own, get children involved in an activity presented to

them, and actually use new ideas and skills introduced to them. Children would be more opening to trying new activities that show different information they might not have known before. Sometimes learning has to be mixed into something else, such as play to show children that they actually like a subject. Game play is especially a good way to engage children in all ages of learning, because learning can be developed in various ways through it. Especially if educators use different types of play with game play, it makes it more complicated for children and they could want to see the game to the end in order to win.

Play allows children to learn informally and gives them social structure as they interact with other children. Using play through hands-on activities by him or herself or with a group allows children to learn teamwork and provides them structure as they work around the rules given to them. For other institutions, the data can be used to create programming that is centered around activities that are hands-on, introduce a new skill, are considered “fun” for children and allows them to feel a sense of competition that creates a goal for them to work towards. By allowing the campers to take control and take part in hands-on activities they were able to come to their own conclusions about different activities. Campers are thus able to retain and use information and skills that they learned in the museum.

## **Chapter VI: Implications for Further Research**

This researcher suggests further investigation into gender and how that plays a role in the campers' experience in the summer camp. It would be interesting to see if there is any fundamental difference between genders and the different ages that impact how engaged boy and girl campers are with activities. While there are some activities all genders might like and find enjoyable, it would be interesting to see if the two genders are or apt to use varying ways of learning. This could possibly indicate that if there were not any specific divide of preference between genders, activities could be more about campers enjoying them for the social bonding they create. However, if there is a divide between the two genders, educators could investigate if there are key characteristics each gender likes and incorporate both into further programming.

This researcher also proposes focusing on how Howard Gardner and his multiple intelligences might help indicate which ways the children are learning and which ways the campers might be learning the best. There are various ways children learn in a summer camp, and in order to help children learn in their own way, museums can investigate further the different types of learning that happen in the museum. Further research can investigate programming that incorporates all or a majority of Howard Gardner's intelligences. Children learn in various ways and by incorporating most of Gardner's intelligences, it allows children to learn in their own way and at their own pace. This way it can engage children who would normally be less involved in a certain type of activity than others. For example, some children do not learn well by listening,

but instead learn by doing. Incorporating programming that consists of both will help children who learn in different ways.

Case studies could be done for individual campers depending upon how long campers attended the camp and which factors created an engaging learning experience for them. Educators could create greater observations of a smaller random set of campers next time, than a general survey of the camp. Educators would then be able to observe those campers more specifically and see what kind of social, environmental, and educational factors promote an open learning experience for the children.

One response that occurred on campers' survey was that they would not show a friend an activity if their friend would not like it. Museums could look further into how this social bond can somehow dictate whether some children will be engaged in an activity. For example, if a camper has friends in the camp, it would be good to note which ways that camper acts while on their own and also when he or she were with a friend. Some campers learn better with a friend who can help them through an activity, while other campers can become easily distracted when they work together with a friend. Educators can look further into how scaffolding occurs between friends, or how new friends learn from each other after meeting through camp. It is always essential to note different behaviors from children and if it is better for them to learn with a friend in a team activity for example, then it would be more conducive for them to learn together. This would be important to see if children are more comfortable working on their own when they learn a new skill or idea or if children prefer to work through it as a team.

Another avenue to look into further is the way younger campers learn from the older ones and see how much scaffolding is going on. Many times during camp that older

children were observed looking after younger ones and made sure they were not left behind when they did group activities. Older campers also directed younger ones for specific jobs at times during activities. Further research could be done to see how much younger children take away from their interaction with the older ones.

Each child is different and the helpfulness of an older child varies from child to child. However, once educators decide which older children are helping the younger ones the most it would be key to chart their effects on other campers and how that sort of interaction can help children learn or engage further in a summer camp. Educators could also investigate more into Junior Counselors' impact on the campers. This study could encapsulate a couple of avenues of research since the Junior Counselors just graduated from being campers themselves. Some institutions have older children facilitate learning for children in different exhibits and programming. Educators can investigate more into how Junior Counselors impact campers in a summer camp and if they can play a larger role in engaging the younger children in activities or information.

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## **Appendix 1**

### Observation Instrument

- 1.) Are students paying attention? (Fidgeting? Concentrating? Etc.)
- 2.) How are students following direction?
- 3.) Are students asking question? (Showing further interest by asking for more information)
- 4.) How are the students responding to questions?
- 5.) How are the students critically thinking throughout the activity?
- 6.) How often are the students interacting with each other?
- 7.) How are the students utilizing new skills introduced to them?



## Appendix 2: Surveys

**Name:**

### Camper Feedback Instrument

**Thank you for helping with this survey. This is not a test. Please fill out the questions below based on your opinion of the activities you did today. This will help giving feedback for camp activities for the museum. Your answers will remain anonymous. Please feel free to use the back if needed.**

1.) How old are you? \_\_\_\_\_

1.) How would you grade this activity? (A, B, C, D, F) Why?

2.) Are there any activities that you did yesterday that you would show a friend? Why?

4.) If one of your camp friends were sick and you were explaining what you did today what would you tell them?



### Appendix 3

#### Counselor Survey (Put in appendix)

Survey Question	RQ 1
1.) What sort of play activities did the children seem most engaged in? How could you tell this?	X
2.) Is there any difference in the way certain ages act with certain activities?	X
3.) What sort of reactions do you encounter during the activities?	X
4.) If you had to make a report of today's activities what would be the one thing you would note about the students' experience or engagement?	X

#### Camper Feedback Instrument

Survey Question	RQ 1
1.) How old are you?	X
2.) How would you grade this activity from on a scale from A-F? Why?	X
3.) Are there any activities that you did yesterday that you would show a friend? Why?	X

4.) If one of your camp friends were sick and you were explaining what you did today what would you tell them?	X
--	---

## Appendix 4

### *Pollination Tag Activity*

- 1.) Ask the students where do they normally see bees?
  - a. Plants
  - b. Flowers
- 2.) Ask the students what do bees collect?
  - a. Nectar – a sweet fluid produced by flowers
  - b. Pollen - is the yellow-green powder-like substance that comes from flowers. Bees returning to the hive often carry balls of pollen which stick to the stiff hairs on their legs
- 3.) Explain that worker bees have a long tube (called a **proboscis**) that they use to gather their food (called **nectar**), the sweet fluid produced by flowers. Worker bees store it in a part of their body called the **honey sac**.
  - a. Explain to students that after they collect nectar, honey bees store their food: The house bees mix the nectar with enzymes and deposit it into the honeycomb.
  - b. Then they evaporate moisture from the nectar enzyme mixture by fanning the honeycomb cells with their wings. You now have honey! The bees then cap the honey cells with beeswax.
- 4.) Tell the students that bees and plants have a **symbiotic relationship**, and ask them if they know what that means?
  - a. Symbiotic relationship - a relationship between two species in which both sides benefit from their interactions.
    - i. For example, bees and flowers have a relationship where both animal and plant benefit.
- 5.) Then ask the students if bees get nectar, what do flowers get?
  - a. Pollination
  - b. **Pollen Baskets** – when bees returning to the hive often carry balls of pollen which stick to the stiff hairs on their legs.
  - c. Flowers trade nectar and protein-rich pollen in return for pollination and reproduction of the plant species. Bees track pollen from flower to flower, which allows flowers to reproduce and grow.
- 6.) Ask the kids why do bees sting?
  - a. Explain that bees and other insects that have stingers, use them for two purposes:
    - i. Defense
    - ii. Predation
  - b. Honey bees and bumble bees use their stingers strictly for defense.
  - c. Bees that are away from the hive foraging will rarely sting unless they are stepped on or unnecessarily aggravated. They are usually too busy searching for pollen and nectar to be bothered by a curious observer or passerby.

Pollination Tag

Prep:

- Set up about 10 minutes before hand
- Have kids bring in a white t-shirt and wear clothes they don't mind getting paint on
- Have them play this outside the boat shop
- Set up the containers of paint randomly around the area
- Supplies
  - Washable paint
  - Containers

#### Activity

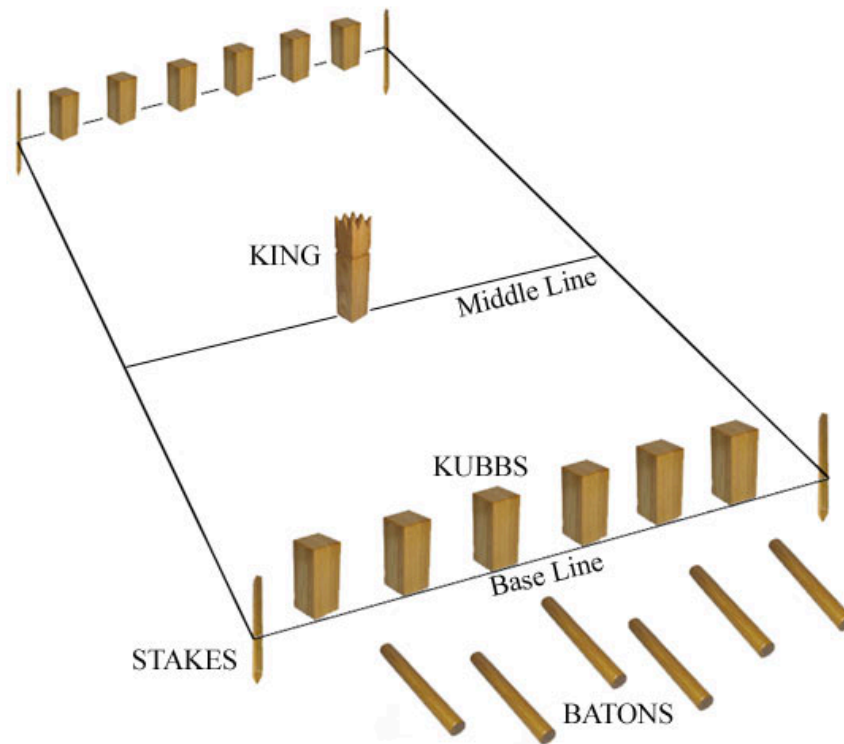
1. Have containers of 3 different color paint set up around the area outside the boatshop.
2. Have the kids who are bees pick up some colored powder in their hands
3. Just like tag, the person who is the bee, or "it" has to tag one of the other kids, or flowers, on their shirt

### ***Kubb Lesson Plan***

- 1.) Introduce yourself and your role at the museum
- 2.) Take the kids to the outside rotunda area on the second floor
- 3.) Set up Kubb beforehand and once you are at the pitch explain the game of Kubb
  - a. **Kubb:** is a lawn game where the object is to knock over wooden blocks by throwing wooden batons at them. Kubb can be somewhat described as a combination of bowling and horseshoes. Today's version originated on the island of Gotland, Sweden. This has been nicknamed over time "Viking Chess."
- 4.) Pieces of the game
  - a. **Corner Markers:** Sticks used to delineate Pitch area. Player must stand between the corner markers when throwing.
  - b. **Throwing Stick or Baton:** Piece used to throw at opposing team's Kubbs. It must be held at one end, thrown underarm, end over end. The Baton or Throwing Stick should never be thrown horizontally.
  - c. **Kubbs:**
    - i. Field Kubbs: Kubbs that have been toppled and then thrown over to the side
    - ii. Base Kubbs: Kubbs lined up on each team's Base Line.
  - d. **King:** The tallest Kubb, which is placed in the center of the pitch between the Baselines.
- 5.) Choose the starting team
  - a. A match is the best of 3 sets
  - b. One player from each team stands behind the same Baseline, each throws a Throwing Stick at the King. The team whose Throwing Stick lands closest to the King without touching it starts the game.
- 6.) The Game Begins

- a. Team A stands behind their own Baseline and throws six Throwing Sticks at the opposing team's Base Kubbs trying to knock over as many as possible.
- b. After Team A has thrown all of its Throwing Sticks, Team B has a turn. But first they have to pick up the Kubbs knocked over by Team A. Then, standing behind their own Baseline, throw underarm then toppled Kubbs into Team A's side of the Pitch (the area between the King and Team A's Baseline and between the Corner Markers.)
- c. They have 2 tries. If any Kubb lands outside of Team A's area twice, Team A may then place that Kubb anywhere on their side of the Pitch but no closer than one length of a Throwing Stick from the King or a Corner Marker.
- d. Team A then stands the Kubbs up which were thrown to their side by Team B wherever they landed. These are now known as Field Kubbs.
- e. It is now Team B's turn to throw their Throwing Sticks. However, they must first knock over any Field Kubbs on Team A's side of the Pitch before they can try for Team A's Base Kubbs.
  - i. If Team A has been unsuccessful in knocking over any of Team B's Kubbs so there are no Field Kubbs set up, then Team B will attack Team A's Base Kubbs in their first round.
- f. After Team B has thrown all of its Throwing Sticks, Team A then must throw back to Team B's side, any toppled Kubbs, which become Field Kubbs as described above, and then tries to knock them over with their Throwing Sticks before attacking Team B's Base Kubbs.
  - i. Try to knock over the Field Kubbs closest to the middle line between each side of the pitch first so the opposing team will not have the advantage of making them their baseline when up next.
- g. However, if, for instance, Team B did not knock over all of the Field Kubbs on Team A's side, Team A, in turn, may stand on an imagined parallel line with the Field Kubb closest to the King which becomes their Baseline when throwing their throwing sticks.
  - i. This gives a big advantage since the distance to the opponent's Kubbs is now shorter.
- h. The game continues with each team taking a turn until one team knocks over all of the Field and Baseline Kubbs on the opposing Team's side of the Pitch. The King may then be the target with any remaining Throwing Sticks. The thrower must stand behind the Baseline when attacking the King and only one Throwing Stick can be thrown in the attempt to knock down the King. If that team knocks over the King, that team wins. If unsuccessful in knocking down the King, the opposing team continues play.

## 7.) Diagram



### *Clay Coil Pot Lesson Plan*

:

- 1.) Ask the audience what do they think of when they hear the words Native Americans?
- 2.) Ask the audience do they know some different kinds of Native American tribes?
  - a. Pueblo Indians: are a Native American people in the Southwestern United States.
- 3.) Why are they called Pueblo Indians?
  - a. When they first encountered the Spanish in the 16<sup>th</sup> century, they were living in villages that the Spanish called pueblos, meaning “towns”.
  - b. The main Pueblos are located primarily in New Mexico and Arizona.
- 4.) What sort of interaction did early explorers have with Native Americans?
  - a. Spanish: When they first encountered Pueblos, forced them into Catholicism, but despite this the Pueblo tribes managed to maintain their traditional lifestyle. The Pueblos were the first to successfully revolt against the Spanish in the Pueblo Revolt of 1680, which expelled them for 12 years.
  - b. Americans: won the Southwest from Spain. Pueblos were largely ignored because they were not offensively warlike like other tribes such as the Apache and the Navajo who terrorized homesteaders and settlers.
  - c. Trade: pottery



5.) What was the use of the pottery?

- a. Religious: has a spirit. Is the product of Mother Earth: her body forms the walls of the vessel; her bounty provides the paints and the very need of having it in the first place. There are songs and prayers to accompany each step in the process of creating a pottery vessel. It is this spirit that kept pottery making from being cast aside completely in favor of more durable and efficient tools.
- b. Trade: the intrinsic beauty in the shapes, forms, and decorative art of the Pueblo Indian pottery was not lost on the new American settlers coming to the west and travelling Easterners.
  - i. Traders encouraged potters to bring in pieces of the quality of the vessels they had seen used ceremonially in the Pueblos. The early traders were the liaisons between the cultures. They played a tremendous role in cultivating American appreciation for Native American art.

6.) Activity:

Lesson 1 Procedure

1. Divide an air dry clay chunk into 3 equal pieces and roll each new chunk into a coil. It takes a little practice, using a forward rolling motion with the hand held straight and using palms and gentle pressure. It works best to stand and use a forward rolling, then lifting, hand motion. When the clay moves toward the edge of the table, lift and move it back, starting over. It does not work well to roll the hands back and forth over the coil. Roll each chunk into a coil, then roll coil up and place in bag.
2. Wet paper towel and drop into bag with coils, write name and section on the tag. Gather ends of bag and put on twist tie. Make sure the whole bag is closed tight.

Lesson 2 Procedure

1. Pass everyone a paper towel and round slab circle. (Teacher should put last name and class section on bottom of each.) Teacher does a demonstration of scoring and painting slip around top edge of slab. Add coil, pressing gently, pinch off and smooth together ends when it is wrapped around slab and they meet. Build three rows high, and then add some decorative finishes for the last two rows, such as S shapes made from coils, waves made over a finger, or rolling little balls, pinching them flat, and adding them in openings made by the wave designs. Be sure to stress that everything that is added MUST be scored and slipped. Also stress that the clay coil pot should not be picked up. Turn the paper towel as you work to build it, and the shape will not get lopsided.
2. Add two more coils in the same way. There are now three rows high on the slab.
3. The last two rows may be any design we have talked about.
4. Smooth out any cracks by painting water or slip over them.
5. Using Crayola paint, allow the students to paint their pot.

### MIA Lesson Plan

- 1.) Ask the students if they know what the initials MIA mean?
  - a. Missing in Action
- 2.) Then proceed to ask the kids what does missing in action mean?
  - a. MIA is a casualty classification assigned to armed services personnel who are reported missing during active service. They may have been

killed, wounded, become a prisoner of war, or deserted. If deceased, neither their remains nor grave has been positively identified. Becoming MIA has been an occupational risk for service personnel for as long as there has been warfare.

#### Activity

- Materials
  - Green army men
- 1.) Spend like 10 minutes hiding army men throughout the museum
- 2.) Have the kids then given the assignment to find their missing troops who are throughout the museum.
- 3.) Who ever has the most at the end, wins.

## Appendix 5

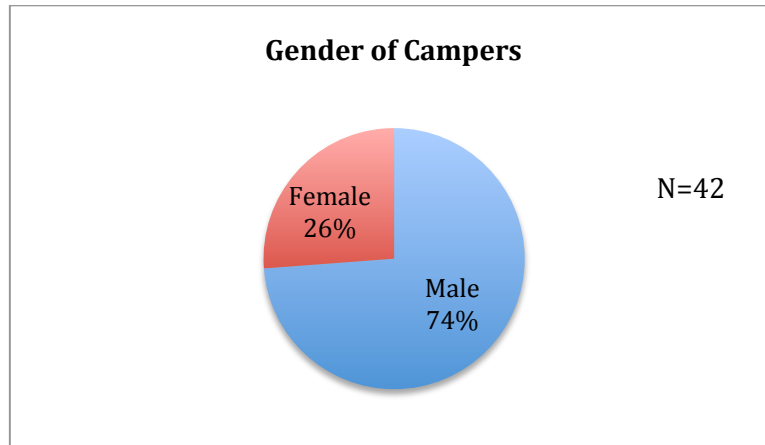


Figure 1: Gender of the Campers

Throughout the summer camp, the majority of campers were male at 74%. However, the ages between these two genders fluctuated throughout their time at camp.

## Appendix 6: Camper Survey Dara

	1.Age	2a. Grade	2b. Why	2b. Why Code	3a. Other Activities	3b. Other Activities Why	3b. Why Activity Code	4. Tell Sick Friend
P&P1 (Comp)		12 A	It was fun but if it was the entire museum it would be better.	Fun, more	No	No b/c I know my friends and they would not like it	Friends would't like it	We used a compass to find these things and gave us clues.
P&P2 Comp		11 A	I liked it, but if it was the entire museum it would be more fun.	Fun, more	No	No b/c all my friends know all about the topic	Already know it	We did a compass activity and you missed it.
P&P3Comp		8 B	It was kind of challenging but it wasn't too hard b/c it was in a confined space.	Hard, more	Yes	Building sextants. B/c it's really cool how you can see the angles and what degree it's on	Sextant (Activity), fun, new skill	It was really fun
P&P4 Comp		6 B	B, because I don't think it's A. I thought it was difficult. I didn't like the prize stuff because only 2 got it and the rest don't	Hard	Yes	Kayak	Kayak/Rowing	I would tell them I don't remember everything. Using a compass, scavenger hunt. Wouldn't tell them about boating b/c they know already. Have no choice whether they can do it or not do it.
P&P5 (CP)		10 A	I would give this an A because it was fun to be creative and make a town.	Fun, Creative	Yes	I would show them the scavenger hunt because it made me think	Scavenger Hunt, Challenging	That we got to draw and create a town
P&P6 CP		11 A	I would grade the activity an A because it was a fun activity and very creative and I love creative stuff.	Fun, Creative	Yes	Yesterday we made a map I would show my friend that, and what we saw in the library because it was fun and very interesting	Map, Fun	I would tell them we did a fun activity where we made a colony plan on paper like a map.
P&P7 CP		11 A	A because it was very fun.	Fun	Yes	Clay pots b/c it is a nice and fun activity	Clay Pots, New Skill, Fun	That I was sorry for them that they missed out on all the fun.
P&P8 CP		9 A		-	Yes	I would show the scavenger hunt because it's fun	Scavenger Hunt, Fun, Challenging	I would tell them that we did fun things such as drawing a colony or crafting.
P&P9 CP		12 C	I didn't really like it because it wasn't that fun	Not Fun	No	We've done this before in my class so no.	Already know it	we had to draw a town and it needed stuff like a water source, stores, schools, houses, and more.
P&P10 CP		11 A	Because we do not need to do hard work and I like the activity	Fun, Easy	Yes	B/c I can tell them my camp is more fun than theirs.	Fun	we did a fun activity and you missed it.
M&M11 (MC)		7 B	Because the kids didn't listen to his story. B/c Sydney had her own. I thought that they drank a lot of alcohol, got drunk and jumped into the water.	Learn, bad teamwork	Yes	The squid dissection b/c I liked touching the brains and eyes.	Squid Dissection, New, Fun	the Mary Celest got abandoned because people got drunk inside the ship.
M&M12		11 A	Because of the scavenger hunt was fun and I won. The theories were okay.	Fun, Competition, more	Yes	Bermuda triangle b/c no one knows about it so I don't know if it is real or fake	Bermuda Triangle, interesting	we went on a scavenger hunt, came up with our own theories and made up stories.

M&M13	8	C	It was on the Olympia nad fun to see it but it was kind of hard. The ship was pretty big and hard to find. I liked to go through everything you might think of.	Fun, Hard,	Yes	I can't remember. But I like Kubb b/c it was a game of strategy and aim	Kubb, New Skill, Challenging	that we went to Olympia looking for clues. About the Mary Celeste, where no one found the crew just the ship. No one ever found out what happened and we had to come up with what we think happened.
M&M14	10	B	B/c it was interesting learning about the Mary Celeste and got ot tell her faf. Because the way it was found, that's why she liked it. She explained to her dad the story.	Fun, Learn	Yes	Flying Dutchman b/c it was funnyb/c the way people were acting	Flying Dutchman, Fun, Challenging	I would tell them the story of the Mary Celeste and my conclusion. I thought maybe the Captain and the wife got captured and the crew went looking but one man who was left behind and he went crazy from loneliness and jumped overboard.
M&M15	12	C	It was fun but scavenger hunts were repetitive but the clues were too many.	Fun, more, Hard	Yes	Botaing and the submarine. B/c sub was cool like an adventure. Boating was just fun.	Kayak/Rowing, Historic Ships, Fun, Cool	Tell them did a scavenger hunt and had to figure out what happened to the people on the ship.
M&M16	12	A	It was fun you got to choose your own group.	Fun, Campers	No	Not really, firend not into this stuff b/c doesn't believe in anything that's not really facts.	Friends wouldnd't like it	We did a scavenger hunt on a ship and we had to piece together a mystery.
M&M17	10	A	Because we won. I like winning.	Competition	Yes	Hide and seek b/c I play with my friends and it's fun to play	Hide and Seek, Friends	We had a scavenger hunt like Kidnap Bob and we had to figure out what happened to a ship.
M&M18	10	B	B/c it was fun but not the best activity. B/c I didn't have as much fun as others.	Fun, more	Yes	Free time. I would show my friend the conning tower.	Historic Ships	We did a scavenger hunt and got clues and had to guess what happened to the Mary Celeste.
M&M19	8	A	B/c it was very fun and because I got to see parts of the Olympia.	Fun, Learn	Yes	Bermuda triangle, b/c it was telling about a real place where ships and airplanes disappear while trying to get to their destination and I like those stuff.	Bermuda Triangle, interesting, Fun	Mary Celeste was about an abandoned ship because they were scared and jumped off the boat and probably drowned and it was found by people and no one was on it.
M&M20 (Kraken)	12	B	Because it was fun.	Fun	No	No b/c my friends wouldn't like it	Friends wouldnd't like it	We gave description of an animal and they had to draw it.
M&M21	8	A	It was fun because I like drawing.	Fun, Creative	Yes	Kubb b.c it's like bowling. And I Like bowling. It was in the middle of difficult and I liked that b/c it was funand challenging.	Kubb, New Skill, Challenging	We did the kraken thing and Kubb. IN kraken we have to draw the kraken and a medium size boat and it was to attack the boat because it's a sea monster.
M&M22	10	A	B/c I got to beat someone.	Competition	No	No b/c I don't have the supplies at my house	Other	We drew stuff like sea monsters.
M&M23	11	A	B/c it was fun and descriptive.	Fun, Creative	Yes	Yes b/c then I can tell them I saw one before	Creative	We learned abot a large squid.

M&M24	10	B	B/c she argued a lot.	bad teamwork	Yes	Kubb b/c it was so fun	Kubb, Fun	It was amazing.
E-Squad25 (Air)	6	A	Because I like it.	Fun	No	Not that I can think of	NA	We put colors in water to show air pollution.
E-Squad26	13	B	It was cool to see a version of how the Earth's pollution looks and affects us and how we affect it.	Fun, Learn	Yes	The food dye activity; I know a lot of people who use a lot of electricity and play indoor during the day. So I don't think they know how much of it affects them	Other (to edu others)	I would tell them that we did an air pollution experiement using food dye and water, and we put a drop of food dye into the water every time a counselor said a statement that corresponed with something we do or have done.
E-Squad27	10	B	It wasn't that exciting but it was fun to learn how much everyday things pollute our air.	Learn	Yes	Show them boating. B/c it's a fun thing to learn.	Kayak/Rowing	Explain we had a class on air pollution and we put in different color dyes based on the things we do in daily life that pollute our air.
E-Squad28	12	C	B/c it wasn't fun, but it wasn't boring.	Not Fun	No	No b/c they wouldn't like it	Friends wouldnd't like it	we put dyes in the water based on our actions.
E-Squad29	13	A	Teaches something important.	Learn	Yes	Yes all of them bc they were fun	Fun	We put dyes in water
E-Squad30	10	A	B/c it was really fun and got to see how much air pollution there is.	Fun, Learn	Yes	Boating. B/c it was really fun and haven't done it as much	Kayak/Rowing, fun	We put in different food coloring for each pollution thing that we did and it ended up that you wouldn't want to drink the water because it was so polluted.
E-Squad31	10	B	B/c it was fun. It was fun because it didn't realize air was that dirty because you can't see it but can see it now because of the water.	Fun, Learn	Yes	Show firing guns on the olympia b/c it was awesome and there was an explosion	Historic Ships	Today we did a bunch of fun stuff.
E-Squad32	12	B	It did not entirely represent air pollution, the food coloring could represent anything, the water would still be brown.	more	Yes	the becuna bc it's cool	Historic Ships	We add water and food color to show different ways of air pollution.
E-Squad33	12	B	B/c it taught us different ways we can pollute the Earth	Learn	Yes	The franklin institute demonstration b/c it was cool to watch	Franklin Institute	Each color of the dye represents something that pollutes the air.
Aqua34 (Filter)	12	D	B/c it wasn't that fun	Not Fun	No	No b/c they wouldn't like it	Friends wouldnd't like it	We made a water filter.
E-Squad35	10	A	B/c it was fun.	Fun	No	No b/c my friends did that stuff	Already know it	We made coal and sand filters.
E-Squad36	11	B	I thought the water filters were cool but boring.	Learn, Not Fun	No	No b/c those activities are ment for camp	Other	That I had fun and that he missed things and tell things that we did.
E-Squad37	10	A	I can pay attention.	Other	Yes	my firend lily likes buttons and I made them	Buttons, Friends	Today was fun but with you not there it wasn't so good.
E-Squad38	6	A	It was really good because our had no dirt at all. Our was lighter so I think it was good.	Competition, Learn	Yes	Button activity. B/c she's really nice and I thought she would like it.	Button, Friends	We used cotton balls and everything to make filters.

E-Squad39	10	A	B/c it was really fun.	Fun	Yes	the filter making. I liked it and thought it was cool that those materials could purify water	Fun, Learn	I would tell them not to pick their nose anymore because the activities we did were really fun.
E-Squad40	7	B	Beasue it wasn;t so fun.	Not Fun	Yes	The button activity	Kayak/Rowing	I did fun things.
E-Squad41	7	A	B/c it was fun.	Fun	Yes	water filter bc it was fun	Water Filter, Fun	I had a fun time. I did a water filter and we had fun. The water filter cleaned very dirty water.
E-Squad42	10	B	It was fun but there could have been more group activity because the group really had only one person did it.	Fun, bad teamwork	Yes	Show the button activity bc a lot of my friends like art and so do I a lot. So I would show others.	Button, Friends	Telll them that we did a fun water filter acticity with a lot of ingredients and the water turned yellow and it was really funny.
E-Squad43	9	B	B/c it was fun but barely got to do anythign	Fun, bad teamwork	Yes	Rowing bc a lot of my friends like boating	Kayak/Rowing, Friends	We used fun ingredients and made brown water turn clearer.
E-Squad44	9	A	B/c we used lot of material that would actually work and filter It right	Learn	Yes	Show my friend the button activity bc can take my friends to a place that makes them. The place is called the oval. They cost \$1	Button, Friends	I would tell them first we started at the bottom of the bottle with holes and we would use cotton balls, sand, paper towels, and gravel to make a filter.
E-Squad45	10	A	b/c it was fun cleaning the water and to see how clean we can make it. To see which group could do it better.	Fun, Competition	Yes	Hide and seek bv he can play it at my house.	Hide and Seek, Other	That we got to make water filters out ofo cotton balls , sand, gravel, and paper towels.
E-Squad46	6	A	I liked it because it was fun. B/c I like builidgn things and hanging out with kids.	Fun, Creative	Yes	Button bc I made it myself	Button, Other	We made water filters to drain water.
Aqua47 (WFYB)	10	A	B/c it was fun and it improved my building skills and funny	Fun, Learn	Yes	Yes bc most of my friends love competition and water	Friends, Challenging	We did a boat building thing out of tinfoil. Then we put metal nuts on them in the water. I sunk my cousins boat by accident.
Aqua48	9	B	n/a	NA	Yes	I would show people the tinfoil boats because it was fun	WFYB, Fun	I did a boat project. I made a boat out of tinfoil.
Aqua49	8	D	I didn't like it b/c it was boring. B/c you would make something and you would destroy it. I don't like destroying things that I make.	Not Fun, Other	No	no	NA	That I hope they felt better. We made boats to have fun.
Aqua50	7	A	b/c it was really fun and Olivier dumped all the weights in his boat and it fell b/c it was too heavy. My boat held 12, it was so long.	Fun, Learn, Competition	Yes	The boat making one. Bv I can only hold 12 and others held 40. B/c it's fun and I like boats and figuring out how many it can hold.	WFYB, Fun, Learn	The most was 43. We made a flat bottom of a boat and if it was less pointy, more weight it can hold. You want to make it square and put it in evenly. My first one was roudn and my second one was long and rectangle.

Aqua51	10	B	B/c I can only put in 3 weight and it's too flat	Competition, Learn	No	no	NA	Today was fun and we made boats and it would be better if you were there. We were trying to figure out which boats could hold the most weights and how.
Aqua52	13	B	B/c I thought it was fun.	Fun	Yes	A few of them because they might like it	Friends	We made a tin foil boat and we put weights in it until it sank
Aqua53	10	A	B/c it was fun to learn how stuff can affect boats in like tipping it, and see how long you can make your boat float.	Fun, Learn	Yes	hide and seek bc I can play with my friends	Hide and Seek, Friends	We made tin foil boats to see how much weights we can hold in them. We put weights in them to see if they could float.
Aqua54	12	A	B/c it was fun.	Fun	No	Nope, this activity is meant for like 12 people	Other	We made boats
Aqua55	8	B	B/c I was using the big weights by accident and it made my boat sink	Hard	Yes	Goinog on the the boats bc it's cool they might like to hear about it	Historic Ships	We had to make boats out of tin foil and had to make the best design work. To make it so it can hold a lot of weights and make it strong enough.
Aqua56	10	A	B/c there wasn't anything bad but it was fun and it worked perfectly. There was no problems with the activity like there were with seal trainer.	Fun	Yes	I'd show them NSEW by that was really fun. Bc it was fun to actually be able to run around	NSEW, Fun	That we made tin foil boats and saw how many meal nuts they would hold. Because to learn about equilibrium and what goes into making boats.
Aqua57	13 (JC)	A	It's informational and fun	Fun, Learn	Yes	Yes bc you can make the WFYB a competition	WFYB, Challenging	We did an activity where we made boats and learned about buoyancy.
Aqua58	9	A	B/c we actually got to see what made them float.	Learn	Yes	the oil spill project bc we actually got to see what they have to do	Oil Spill, Learn	We made a boat out of tin foil and then put it in the water and put weights on it.
Aqua59	7	B	B/c it's not the best. My boat didn't get so many but my sister did a good job.	Competition	Yes	I would show my best friend what floats your boat bc it's fun, she is on my swim team	WFYB, Friends	We did a boat thing. At first I could only do 1 weight for my boat and then I could do 29 weights.
Aqua60	6	A	B/c my first on, it held 11. I liked it	Competition	No	no	NA	I would tell them they could get on a boat with me. We made boats boxes so they could float better and that's what happened.
Navy61 Sailor Tatt	12	A	I would grade it A because a lot of kids became involved in it.	Competition	Yes	Yes b/c they might enjoy it	Fun	All the different activities.
Navy62	10	A	B/c it was fun and we got to do them ourselves.	Fun	Yes	the tattoos bc we got to make them ourselves	Tattoos, Other	Today we made tattoos with plastic bags and we went rowing in the morning like everyday.
Navy63	9	A	B/c it was fun and awesome.	Fun	Yes	yes minefield bc it is fun	Minefield, Fun	I would tell them that we did a lot of good games.
Navy64	11	A	It was fun and I got to use sharpie on me	Creative	Yes	Yes so they can do it at home	Tattoos, Do it at home	We made cool prints and you should have been there
Navy65	11	A	It was fun because we got to draw on ourselves	Fun, Creative	Yes	the obstacle course bc my friends like playing physical games	Obstacle Course, Challenging	We gave ourselves tattoos and we ran an obstacle course. Also we played dogdeball in our boats.



Navy66	11	A	B/c it is very fun.	Fun	Yes	tattoos bc it was fun designing my own tattoo	Tattoos, Fun, Creative	That they missed out on a lot of fun because we got to make our own tattoos.
Navy67	10	A	B/c there are games and activities that are fun and I also like the kayaking.	Fun	Yes	I would show a friend the sailor tattoos bc it's cool	Tattoos, Fun	I would tell them about the tattoos and do it with them
Navy68	10	B	B/c it was fun but not super fun.	Fun	Yes	the obstacle course bc it was really fun	Obstacle Course, Challenging	That we did an obstacle course and sailor tattoos and looked at picture from back than
Navy69	10	A	Sometime I do things not always right	Other	Yes	splashing on the water my friend lily likes wars	Kayak/Rowing	Today was fun but if you were there it would be better.
Navy70	13 (JC)	A	B/c it was fun thing to do	Fun	Yes	dogtags bc it is a fun little thing to do	Fun, Creative	We made sharpie tattoos, letters to soldiers and dog tags
Navy71	12	A	B/c it was awesome and we did tattoos.	Fun	Yes	yes bc who doesn't like fake tattoos	Creative, Fun	I would tell them that we made tattoos with a sharpie.
FFF72 Owl	10	A	B/c I liked it and we got to do it by ourselves	Fun, Learn	Yes	yes I would show him/her the bones in the owl pellet bc it was fun and we got to figure out what the owl ate	Owl Pellet, Fun, Learn	I would tell him/her that yesterday we dissected owl pellets, to find out what was inside of them. Then we glued them on to a black sheet of paper and took them home.
FFF73	11	A	This activity is quite fun and it teaches about owls and their diets.	Fun, Learn	Yes	My ghost story bc it was a fun and scary	Ghost Stories, Creative, Fun	The Academy of Natural Sciences came to talk to us and we told ghost stories.
FFF74	8	C	It was not the best but it was sort of fun.	Not Fun	Yes	going on the olympia nad the becuna bc it's cool	Historic Ships	We told ghost stories.
FFF75	10	B	Not an A b/c all we had to shift through it was an oversize toothpick	Other	Yes	yes I would tell a friend my ghost story	Ghost Stories, Creative	That we found skeletons in owl pellets.
FFF76	11	C	It was fun but gross and smelly	Fun, Other	Yes	we told ghost stories. I think my friends would enjoy ghost stories. Also we made flowers and my friends like crafts	Ghost Stories, Creative	We made flowers and told ghost stories.
FFF77	10	C	I found it gross and horrible b/c I think it's dumb to be picking at throw-up	Not Fun	No	no bc I don't want anyone to think of me of playing with throw-up	Not Fun	I would say we went kayaking and played with the ball and told ghost stories.
FFF78	11	A	B/c it was fun and gross.	Fun	No	no bc they would get grossed out	Friends wouldn't like it	the pellets were gross and you have loved it.
FFF79	6	A	B/c it was creepy. b/c you're opening it like a a pooped out shell and the skulls were coming alive.	Learn	Yes	yes bc it's cool	Fun	We made glowers we used construction paper and scissors.
FFF80 (Tree ID)	9	B	It was fun and liked all the leaves and root beer leaf which smelled like rootbeer. I liked that and tree rubbing.	Fun, Learn	Yes	Pollination tag bc everyone was it at the last part and everyone was throwing stuff	Pollination Tag, Fun	I would say that we did tree rubbing and copoed which tree it was and smelled certain ones.

FFF81	12	B	B/c it was fun but kind of hard. We got to see all these different trees and bark rubbings. It was hard b/c I messed up at times.	Fun, Hard	Yes	Pollination tage bc it was really fun and I've never done it this before	Pollination Tag, Fun	We played this fun game and had to do our bark rubbings and identify different types of trees.
FFF82	11	A	It was really fun and cool	Fun	Yes	yes my tree book because it was a fun activity	Fun	We identified trees and kayaked.
FFF83	11	B	it was fun but kind of boring.	Fun, Boring	Yes	pollination tage it was super fun	Pollination Tag, Fun	we played pollination tag and did a tree guide it was okay
FFF84	10	B	B/c I love nature and it was really fun. It was fun collecting tree leaves and figuring out what they were.	Fun, Learn	Yes	Pollination tag bc I did the colorrun and it was the same thing as pollination tag so I liked pollination tag	Pollination Tag, Fun, Do it at home	We went to different trees, figured out what they were, taped leaves to a booklet and rubbed crayons in the booklet to make bark marks and wrote down the name of the tree.
FFF85	11	A	B/c we got to walk around harbor park	Fun	Yes	yes the tree ID bc I found leaves and tape them in a book	Tree ID, Fun, Learn	We got to collect leaves and paste them in a book
FFF86	11	A	B/c we got to learn about trees.	Learn	Yes	the pollination because we got to spray each other with color	Pollination Tag, Fun	We got to study trees and had a fun time.

4. Tell Sick Friend Code	5. Gender
Learn	M
Learn	M
Fun	M
Learn	M
Learn	M
Learn Fun	F
Fun	M
Fun, Learn	M
Learn	M
Fun	M
Learn	M
Learn, Creative	M

Learn	M
Learn, Creative	F
Learn, Creative	M
Learn, Creative	M
Learn, Creative	M
Learn, Creative	M
Learn, Creative	M
Skill, Creative	M
Learn, Creative	M
Creative	M
Learn	M

Fun	F
Learn	F
Learn	F
Learn	M
Learn	M
Other	M
Learn	M
Fun	M
Learn	M
Learn	M
Learn	M
Learn	M
Fun	M
Fun, Other	M
Learn	M

Fun	M
Fun	F
Fun, Learn	M
Fun, Learn	F
Learn	F
Learn	F
Learn	M
Learn	F
Learn	F
Learn	F
Fun, Creative	M
Learn	M

Fun, Learn	F
Creative	M
Learn	M
Creative	M
Learn	M
Creative, Learn	M
Learn, Creative	M
Creative	F
Learn, Creative	F
Creative	M
Other	M
Creative, Fun	M
Fun	M
Fun, Creative	M
Fun, Learn	M

Fun, Creative	M
Creative	M
Learn	M
Fun	F
Creative	M
Creative	M
Learn	M
Fun	M
Creative	M
Learn	M
Fun, Creative	F
Creative	M
Fun, Learn	M
Creative	F
Learn	M



Fun, Learn	M
Learn	M
Learn, Fun	F
Learn, New Skill	M
Learn	M
Learn, Fun	M

## Counselor Survey Data

	1. Activities Engaged in		2. Difference in different ages v. activities	2. age v. activities code	3. What sort of reactions do you encounter during activities	3. Code
1. Compass activity	scavenger hunt, competitiveness	Competition	younger children more engaged. Some learned from watching the older kids.	age	questions	questions
2. Compass Activity	Compass competition	Competition	Kids were more engaged when there was a prize	Competitiveness	questions	questions
3. Colony planning	When put in a group, they were more engaged. Campers worked together and talked through how they wanted to make their colonies.	Teamwork	Older kids took charge on this activity	creative	The kids tried to be strategic in developing their colony in some respects. Whether it was over where the walls went against an attack or where the town stores went.	strategy
4. Mary Celeste	scavenger hunt	Competition	Older kids more invested in search	Competitiveness	Excitement over historic ships	excitement
5. Mary Celeste	Scavenger hunt, and theories	Competition, critical thinking	Older kids were more engaged in being the first to finish	Competitiveness	The kids are always excited to go on the ships	excitement
6. Water Filter	More engaged in activities that are hands-on and require thinking creatively	hands-on	Older kids too cool. Do not outwardly express interest	Older kids too cool	Some say its boring, but ask to do it again.	too cool
7. Water Filter	All participating. Eager to see if water is clean	hands-on	older kids think everything is boring. Harder to keep entertained	Older kids too cool	Some thought the experiment was gross	ick factor
8. What Floats Your Boat	They were more engaged in creating the best boat	Competition	The younger kids had a tougher time making the boats. Some of younger kids emulated the older kids' boats for help.	age	Kids would ask to test their boat before putting weights in to see if it would float first	strategy
9. Tattoo	Very into creating their own tattoos	hands-on	Older kids acted like they were "too cool" for the majority fo the activity.	Older kids too cool	Older kids would complain a lot fo the time during and after every activity	too cool
10. Tattoo	They liked making their own tattoos	hands-on	Younger kids were more creative with some of their designs	creative	Excitement when the tattoos came out right	excitement
11. Owl Pellet	Kids very much into finding the most bones in their pellet	hands-on	Younger kids first disgusted by the idea but then got into it	Other	Once the kids started finding bones, they thought it was really cool and less gross	excitement
12. Owl Pellet	Kids initially afraid of the owl pellet. Enjoyed the project where they actively do things	hands-on	All ages seemed to enjoy the activities.	None	Students had some trouble getting past the ick factor	ick factor
13. Urban Tree ID	kids interested in this since it took place outside of the museum. All were participating and wanting the best leaf	hands-on, Competition	Older kids took more time in trying to make the booklet look pretty and creative. Younger kids were just engaged	creative, age	Some kids had a hard time listening and participating. Since they were outside, some of them were all over the place.	excitement
14. Water Filter	The campers were engaged in activities that enabled them to interact with different elements of the activity and figure out for themselves the solution to the best filter.	hands-on	Older Kids acted too cool to do the activity but they wanted to do it again at the end to see if they could do it better. Also The older kids took on more of a role at times because some of the younger kids weren't as interested or were unsure what was the right course. The older kids helped direct the younger kids.	Older kids too cool, age	Some of the kids tried to talk it out and figure which was the best solution to making a good filter. They also asked questions about the filters.	strategy, questions

4. Note	4. Note Code
newness engaged the kids more if they hadn't used one before.	new skill
It being new to some held more attention to some kids	new skill
The older kids took it more serious than some of the younger ones	other
Older kids took care of the younger kids, so they wouldn't fall behind	teamwork
Some of the kids were really into coming up with their own ideas about what happened to the Mary Celeste	critical thinking
Need more time for activities so kids can appreciate the activities	other
Kids able to relate their water filter activity to waterworks presentation on water filters.	new skill
Even after their second try, some of the kids still wanted to try again and get the best boat with the most weights	new skill
All the kids were engaged and competitive in Minefield	teamwork
All the kids when asked had specific reasons why they put a certain tattoo on themselves	other
Easier to catch their attention and excitement once they see materials in front of them	new skill
The student enjoyed the activities more than they thought they would. They were excited about finding and identifying bones correctly	new skill, critical thinking
Some kids were really happy with their booklet. Having their own booklet makes the activity theirs.	critical thinking
The kids were able to relate this to other sort of experiments they saw before and how it might have been different. But it made them really think of the order of ingredients the filter needed to be in.	new skill, critical thinking