

HANDS-ON, MINDS-ON: EVALUATING EDUCATION COLLECTIONS

By

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To my Dad, who can't be here to see this end, but always saw my best beginnings

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LIST OF ABBREVIATIONS

BSC	Bishop Study Center
Harn	The Harn Museum of Art in Gainesville, FL
PMM	Personal Meaning Maps

Abstract of Dissertation Presented to the Graduate School
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Education collections are understudied, and therefore underutilized, in the museum field. This thesis examines a specific education collection at the Harn Museum of Art in Gainesville, FL through both contextual and primary research. Though the Harn has been conducting facilitated use of the education collection since 2002, there has never been an evaluation of the collection. This study provides research-based feedback for the museum on how visitors perceive their experiences in the museum, and how those recollections change with exposure to facilitated interactions with an education collection. Historical analysis of touch in museums, and a detailed examination of educational theory lend to create a theory for education collections, summarized in a series of best practices for education collections.

CHAPTER 1 INTRODUCTION

Many museums keep objects used for tactile educational programs separate from objects used primarily for display and research. Objects deemed acceptable for visitor touching are grouped into education collections, where they are “used to provide visitors with opportunities to handle museum objects” (MacFarlan, 2001). MacFarlan was the first to argue for the benefits of education collections, described as offering “hands-on and minds-on experiences,” to which the title of this thesis pays homage (p. 168). While there are plenty of resources for incorporating hands-on object-based learning in science centers (Shaby, Assaraf, and Tal, 2017; Tran, 2012), history museums (Bariso, 2010), and of course, children’s museums (Howard, 2013), there is relatively little information about hands-on object handling in art museums. This may be due to necessary protective barriers art museums employ to protect their collections. Art museum objects tend to be fragile, particularly susceptible to oils and dirt from fingerprints, and can be extremely expensive. As a result, touch has long been restricted in art museums. Objects are often placed inside vitrines, behind protective stanchions and barriers, and security guards are more obvious than in other museums.

Keene argues that object-based learning happens often with museums, but rarely with collections:

It is well recognized that real, three-dimensional objects can engage attention in many ways, and that much can be learnt from them about technologies, design, other cultures, the past and the present, and the natural world. Yet in museums, emphasis is on educational activities using exhibits and programs, with little use of the collections themselves. (2005, p. 66)

This emphasis on using tactile interaction with objects for special events, and not as a regular feature in exhibitions creates niche groups associated with touch in art

museums. Children (Paris and Hapgood, 2002), the elderly (Rowlands, 2008), and the visually-impaired community¹ (Hayhoe, 2013) have been frequently studied as benefiting from tactile interactions, but the casual museum visitor is not as frequently researched. This study examined the effect interaction with objects had on visitor's recollection of the museum visit, and how visitors perceive the museum.

Museums are in the business of collecting things, primarily valuable things to look at. Museum collections are created to educate the public on the natural world and our shared humanity, and to preserve valuable objects for the education and enjoyment of future generations. The International Council of Museums (2007) defines the museum as:

a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for purposes of education, study and enjoyment. (article 3, section 1)

This internationally accepted definition places a responsibility on museum institutions. They must be permanent, implying their collections, as is often expressly detailed through policy, must also be permanently cared for—an expensive endeavor for valuable objects. This is a cause for concern regarding education collections, which allow object-handling and therefore reduce the ability of the museum to care for such collections permanently. In addition to caring for objects in perpetuity, museums must serve society, and educate its citizens. As institutions made for the public, many museums are perceived as holding their collections in public trust for the benefit of

¹ Restricting programming to touch-interaction for people who are blind or low-vision has proven to be ineffective and insensitive to their overall visitor experience. See De Coster & Loots (2004) for more information.

humanity. Lastly, this definition places museums as centers of education, deeper learning, and enjoyment.

Education collections are unique collections that can foster the “education, study, and enjoyment” advocated by the International Council of Museums. These collections, when used according to the home institution’s mission statement can be dynamic community anchors, and promote deeper levels of meaning-making in art museums. This thesis study examined the way a specific education collection at the Harn Museum of Art in Gainesville, Florida is used to facilitate increased meaning-making and to enhance the visitor experience.

Research Questions

I have always been interested in hands-on learning, and the idea of innovatively permitting touch in museums presents a unique dilemma for me. While the care and protection of objects cannot be diminished, the relevance and intimacy provided by tactile interactions yields intriguing possibilities. In the year before graduate school I worked as a front-line educator in the Bishop Study Center (BSC) at the Harn Museum of Art (Harn). Here I facilitated countless interactions with the education collection, and became cognizant of the many possibilities the collection contains. Curiosity, the subject of Renaissance collections often referred to as curiosity collections, manifests itself in the uncovering of new objects and the ability to handle them. That year I discovered that children who were permitted to touch in the BSC inherently understood that the experience ended in the doorway—rarely would any of those children be spoken to by a guard due to unwanted tactile interactions in the gallery. I also learned that visitors, primarily children and college students, appreciated the space to explore with their hands, bolstered by a knowledgeable staff member who could recommend related

works on display. These observations and many more led to my sustained interest in the collection, and an internship re-housing the objects (discussed further in Chapter 2). As a result of my interest, I was curious about how education collections might fit in with Falk and Dierking's (2012) Contextual Model of Learning, in art museums specifically. Therefore, the following research questions were designed in a qualitative study to learn more about education collections and the visitor experience:

R1: In what ways does interaction with an education collection affect the visitor experience in the art museum?

R2: To what extent does age or group dynamic affect the way visitors interact with an education collection?

Methods

To study these questions and explore the ways an education collection may be utilized and enjoyed during a museum visit, a mixed-methods approach was developed and employed. As this study would examine the visitor experience through human subjects, I applied for and received approval for this study from the University of Florida's Institutional Review Board. Visitors were approached and asked for voluntary participation in a short interview at the beginning of their visit and again at the end. Each interview consisted of a mind-mapping exercise, Personal Meaning Maps (PMM) and short supplemental qualitative questions. Demographic information was also recorded. Visitors then experienced the museum according to their preference, with some of the participants interacting with the hands-on education collection in the Bishop Study Center (BSC). Paige Willis, the staff member who works in the BSC, facilitated each hands-on interaction and wrote a reflective narrative response after each interaction.

These three approaches, Personal Meaning Mapping, qualitative interviews, and narrative response, will be discussed more fully in Chapter 3.

Research Site: The education collection at the Harn Museum of Art is comprised of 236 objects primarily representing African and Asian art, two of the five collecting areas. These objects are kept in drawers in the Bishop Study Center (BSC), an integrated research library and family space, where they are available to visitors at any time. The *always-on*, or always available for visitor use, activity typically involves visitors opening drawers to discover fascinating objects with bright, attractive labels. All interactions during museum hours are facilitated by Willis who expertly guides visitors through the drawers, leading their curiosity with questions about the objects, what they might be used for, and how they might relate to the visitor's lives. The key aspect of this mission-centered collection is the facilitation where Paige can help visitors draw connections between the hands-on objects and the permanent collection, museum rules, aspect of their lives, and much more. This facilitation has the possibility to create a deeper connection with the objects and the museum, leading to more profound meaning-making. It also offers the joys of discovery, piquing curiosity through the opening and closing of drawers, and providing an entertaining experience not typically associated with art museums. As the collection is housed and used in a shared space, half family-orientated play and making and half research library, the hands-on education collection offers a fun and engaging activity for visitors of all ages, with the opportunity for further textual research.

My own experience as the BSC Assistant involved facilitating hundreds of interactions with the hands-on education collection, which led to my sustained interest in

how these collections can, and should be used. Through my work, I developed a deep understanding of the environment and experience interaction with the hands-on education collection can offer visitors. I discovered that engaging facilitation leads to profound interest in other museum objects and collections, and deeper meaning-making throughout the museum visit. One particularly potent example during my role as Bishop Study Center Assistant about three years before the research project, came from a Spanish-speaking, speech-delayed three-year-old, who we will call Maria. Maria and her dad visited the BSC at least twice weekly for several months, and would interact with the same Panamanian molas. Maria's interactions with the molas began through tactile discovery, running her fingers over the threads and occasionally commenting on a color. Over time and with dedicated facilitation by myself and her father, Maria began matching toys to the colors she found in the molas. After several months of matching, Maria began to vocalize the colors, which quickly turned into questioning why those colors were used, and what shapes they made. Her progression into verbal articulation, and her learned ability to draw connections with other objects has convinced me of the inherent power found in education collections, and the educational benefits of facilitating tactile exploration of these objects. Today, Maria is a First-Grader, fluent in both Spanish and English, who still loves to visit the BSC and explore both the education collection and the Harn museum.

The Harn has been conducting facilitated use of the education collection since 2002, but has never completed an evaluation of the collection. This study provided crucial feedback for the museum on how visitors perceive their experience with the education collection in relation to their experience in the remainder of the museum.

Knowledge of how the education collection is affecting the Harn's visitor's experience will enable the Harn to think critically about using the education collection in new and innovative ways.

Distinction Between Teaching and Education Collections

There are a variety of collection genres just as there are a variety of museums. Collections are not the same as museums, though the two are often mistakenly equated. Most collections serve the same holistic purpose as museums, to educate and entertain the public. Keene (2005) discusses that for contemporary museums and collections "there is a variety of ways of making use of collections, but different types of collections can be used in some ways but not others" (p. 25). Not all collections are alike, and a distinction must be made between permanent, research, teaching and education collections.

Permanent collections are the collections which the museum or other institution intend to keep in perpetuity. These collections are used mostly for display in exhibitions, and though they may not be on view all the time, are routinely loaned or showed. Research collections are usually permanent collections in the sense that their caretakers will preserve them absolutely, though they may be used rarely, if ever, in exhibitions. Research collections, like exceedingly large natural history collections, are not amassed for public display. Rather, these collections are for researchers "who earn their living through research and also many people for whom this is a private or leisure interest" (Keene, p. 51). These collections are often available by appointment and their primary use is to further knowledge.

Teaching collections are often secondary or axillary collections, though may sometimes, such as the case with many university collections, form the bulk of the

primary collection. Teaching collections, as I define them, are collections used primarily for purposeful instruction. These collections may be used in exhibits, for hands-on object-based learning, or for research. Teaching collections are differentiated from research collections in terms of use—teaching collections primary motive is to instruct groups of students, where research collections primary use is to learn individually.

Education collections are likewise dissimilar from research and teaching collections. I define an education collection as a collection in a museum set apart from the permanent collections and designated for explicit informal public educational uses not typically allowed with the permanent collection. Informal learning is here key, and demands a short definition. One way to define informal education that I find particularly useful is as “informal education is the wise, respectful, and spontaneous process of cultivating learning. It works through conversation and enlargement of experience” (Jeffs and Smith, 2011). While both teaching and education collections share many characteristics, such as hands-on accessibility and educational uses, they are different in their approach to display and teaching. Teaching collections are primarily used to intentionally and formally instruct through group settings often arranged purposefully in a display, whereas education collections are inherently more informal and allow for a larger degree of casual public access and handling.

Education Collections: History and Uses

News and media outlets are obsessed with discussing the debate surrounding Confederate monuments in the United States, and the role education and museums play in this controversial saga. CNN investigators Chavez and Grinberg (April 2017) reported on the high-profile removal of Confederate monuments from public spaces in New Orleans in the dead of night. New Orleans mayor Mitch Landrieu asserted that the

statues would be placed in storage until they can find a new home. Landrieu stated that “we can remember these divisive chapters in our history in a museum or other facility where they can be put into context,” (para. 11). However, Landrieu failed to realize that many museums are wary of accepting contentious and controversial symbols of the past. There are few institutions with the capability and mission to accept these large monuments as donations. Museums today are still subject to the scrutiny of displaying the past in the light of the present, and inserting a controversial narrative into a socially-conscious museum is detrimental to the modern museum’s strivings to separate itself from its colonial roots. Museums, and their collections, have much to teach the public and therefore hold much power, but they must be careful how material is presented.

Modern museums continue a long-standing tradition of balancing power and public good. The history of early museums profoundly influences the museums of the past 100 years, and must constantly be confronted. Bennett (1995) states that:

Similarly, the past, as embodied in historic sites and museums, while existing in a frame which separates it from the present, is entirely the product of the present practices which organize and maintain that frame. Its existence as ‘the past’ is, accordingly, similarly paradoxical. For that existence is secured only through the forms in which ‘the past’ is *publically demarcated* and *represented* as such, with the obvious consequence that it inevitably bears the cultural marks of the present from which it is purportedly distinguished. (p. 130, italics in original)

Museums continue to struggle with presenting the past life of both the objects they display, but also the history of museums and collections themselves. Education collections are not the answer to politically and emotionally charged questions, but this issue does teach us of the enormity of power inherent in collections- all collections. How collections are used affects how people conceptualize museums.

Education collections are not a new, cutting-edge educational idea, but are rather part of a longer tradition of collecting. Chapter 2 begins with a brief history of collections and demonstrates the continuity between early historic collections (Genoways & Andrei, 2008), Wunderkammer (Alexander, 1983), Enlightenment and Industrial Revolution-era museums (Bazin, 1958), Victorian museums (Conn, 1998), and the earliest recognizable education collections (Alexander, 1983). John Cotton Dana was head librarian at the Free Public Library in Newark, New Jersey in the early 20th century, and went on to found the Newark Museum. Dana purposefully incorporated a collection specifically designated for educational purposes (Alexander, p. 393), allowing public access to the collection in ways unheard of in the past, but reminiscent of the ways collections were engaged with through Wunderkammer and early museums.

Chapter 2 also discusses educational theories, and how they are utilized to create truly engaging and beneficial experiences with education collections. Object-based learning, or the making of meaning and drawing of knowledge from intimate interactions with an object, have been the subject of many studies (Rennie & McClafferty, 2002; Wood & Latham, 2011) though is often overlooked when examining the holistic experience in art museums.

The museum field is rich in studies examining visitor-object interactions, which can and should be interpreted to include education collections. Object-based learning does not necessarily denote hands-on learning. Wood and Latham's (2014) text on visitor-object interactions, for example, focuses predominantly on visual interactions. Research stemming from other fields such as education philosophy (Dewey, 1938), art education (Blakey and McFayden, 2015), museum evaluation (Falk and Dierking, 2012)

and neuroscience (Lacey and Sathian, 2014) inform museum education of the importance of hands-on experiences in educational settings. Traditionally, hands-on learning in museums is studied by segmenting museum audiences into manageable study participants. These groups, as mentioned earlier, typically involve children (Paris and Hapgood, 2002), the elderly (Rowlands, 2008), and the visually-impaired community (Hayhoe, 2013). This study broadens the audience to include the casual museum visitor, especially college students and young families. Moreover, this study provides a framework for how evaluation of education collections can be conducted to understand how it impacts the visitor experience and perception of art museums, as opposed to purely education, and offers some effective characteristics of education collections to create best practices.

Summary

Education collections have been a small segment of museum collections for a long time, and split from other collections during the modernization of museums. Though a small percentage of total museum collections, these objects have the capacity to broaden visitor perspectives, knowledge, and curiosity through focused and specific use. This original research has been designed to examine one such education collection at the Harn Museum of Art. It important that museums better understand the nature and direction of education collections, and this study provides a useful case study on how one museum is evaluating and gaining deeper understanding of their hands-on education collection. Findings from this study are presented in Chapter 4, and dialogue on the implications and interpretation of the findings will be discussed in Chapter 5. Alongside qualitative interpretation of the collected data, I will present my own recommendations for museums wishing to create or evaluate an education

collection, as well as characteristics of successful and effective uses of education collections. These characteristics and recommendations are found in Chapter 5 and can be applied and adapted for all museums.

CHAPTER 2 LITERATURE, CONTEXT, AND BACKGROUND

This chapter examines three traditions which influence education collections, specifically at the Harn. The first section will discuss the history of collections through time, exploring the ways touch has historically been incorporated in the collecting and educative processes. Additionally, this section will give contemporary examples of education collections and how they continue the collecting traditions of the past. The second section will define and discuss informal learning and object-based learning as applied to education collections. I will also make a case for incorporating educational theory to education collections specifically and museum education generally. Lastly, I will turn to a brief history of the hands-on education collection at the Harn Museum of Art. A short history of the accumulation of objects and the various ways they have been used through the years is presented and discussed. My own interest in this collection will be mentioned and will set the tone for the evaluative study conducted for the collection.

Literature—The Art of Collecting

Museums, and their collections, exhibitions, programs, and objects—are part of a larger colonial heritage (Bennett, 1995, p.47) which must be considered to understand the history of touch in museums. Pearce (1992) states:

the museums we see around us, in Europe and throughout the globe, did not spring ready-made from the earth like men from dragon's teeth, but have a long and complex history behind them which shapes what they are today. (p. 89)

The ability to touch objects in museums has a similarly complex history, connotating ownership and possession of both objects and the knowledge they relate, and will be

examined through a series of *Touch Points*, which travel through the major developments of Western collecting practices.

Touch Point—Early Collecting Habits

The Victorian entomologist Hagen proposed in 1876 that the great philosophers of the Roman and Greek golden era maintained collections from which they worked (in Genoways and Andrei, 2008). “It seems certain that prominent naturalists, such as Aristotle and Apuleius, must have had collections, though there is not direct testimony to that effect given in any of their works still extant” (p. 40). There is, however, strong evidence for the Museum of Alexandria recorded by first century historian Strabo, and related by Genoways and Andrei (2008):

The museum is also part of the royal palaces; it has a public walk, an Exedra with seats, and a large house, in which the common mess-hall of the men of learning who share the Museum. This group of men not only hold property in common, but also have a priest in charge of the Museum, who formerly was appointed by the kings, but is now appointed by Caesar. (p. 15-16)

This passage has a fascinating number of references to the age and uses of the Museum, which may be equated to the Library of Alexandria. We have few remaining accounts of the Library, and Strabo’s rendering of the Museum is all that remains of that particular collection. It is possible, then, to assume the two types of collections were related, if not consolidated.

Elevated to the highest position, Strabo tells us the museum is housed in the royal palaces, and is governed by an appointed position. This position is bestowed by Caesar, though Strabo mentions it used to be appointed by local kings, suggesting the age of the Museum to be older than Alexandria’s inclusion to the Roman Empire. Museum functions may only be guessed at, but the building is said to contain an Exedra, or a semi-circular platformed area with arena-like seating used for discourse

and learning. Education, then, must have taken place in some form in the Museum of Alexandria. Sadly, Strabo makes no mention of collections, or even of objects, but we know the Library of Alexandria boasted the largest collection of books, or more correctly papyrus scrolls, in the ancient world. Scrolls, of course would be touched extensively by scholars, and given Aristotle's common references to touch as a gateway to understanding, it is reasonable that the Museum of Alexandria would have used objects in similar ways (Bremer, 2011).

Touch Point—Wunderkammer

Wunderkammer, considered by many scholars to be the first recognizable museums, were glamorous and often cluttered rooms dedicated to storing and learning from curious objects. Common in the homes of the very wealthy during the European Renaissance movement and subsequent centuries, these collections were amassed particularly by the ruling class. Objects were collected from all over the world, and chosen for both their educative and awe-inspiring value. Alexander (1983) states:

The number of collections of curiosities throughout western Europe in the sixteenth- and seventeenth-centuries was great. The rise of scientific interest with increasing reliance on observation as a means of explaining the world and its plants and animals gave these collections new value. (p. 27)

These objects were most certainly touched, handled, smelled and otherwise closely examined by the noblemen's guests, who both learned directly from these objects and from the guided commentary provided by their host.

Alexander explains that there were three main uses of curiosity cabinets—to conserve, to collect (for presumably social and political reasons), and for scholarly research (p. 31). With the all-encompassing and often conflicting powers of the Church and Crown on the decline, science arose as a new way to explain and organize the

world. Early Wunderkammer were entrenched in Renaissance sentimentalities, and observable objects were used alongside religion to describe the natural world and man's role in the order of it. Systematic display and careful conservation were characteristics functional collection, and a clever collector would have understood the power owning such a collection might impress upon callers. Pearce (1992) explains:

These curious collections were contrived as making manifest the existing harmonies of the universe as acting as microcosms of universal nature, the assembling and contemplating of which was at once an act of discovery and definition and a mystical exercise. (p. 95)

If a collection would be an excellent microcosm of the natural world, it would have enabled its owner to study all manners of nature, different cultures, and even religion from the position of owner of the microcosmic universe. Wunderkammer enabled their owners to become enlightened members of society, and all who saw their collections marveled at both objects and the owner's breadth of understanding.

Wunderkammer were created not only to display the curious objects, but to exude their owner's power in the world. Ownership is a powerful motivator for early collectors, to demonstrate the places they have been, animals they have shot and stuffed, and peoples they have studied or subdued. Of course, not all Wunderkammer collectors procured the objects themselves. Francisco I de Medici (1541-1587), the despotic Florentine ruler, donated a large collection of objects to form the Uffizi Gallery, utilizing the previous office spaces as a state-run Wunderkammer (Bennett, 1995). Francisco I de Medici would have inherited many objects from his father, collected some on conquests and travels, and received others as gifts. Francisco I did not bestow his collection for altruistic reasons, but rather "this was in response to the need for public

legitimation of the Medici dynasty” (p. 27), resulting in the elevation of the ruling family and solidifying Francisco I’s claim on Florentine authority.

Bennett maintains that Renaissance collections were more influential than the sum of their objects:

Collections of valued objects formed a part of the cultural accessories of power within and between ruling strata rather than the display of power before the populace that was the point at issue. Consequently, few collections were accessible to the popular classes; and, in some cases, those who might be admitted to view the princely collections were so few that they symbolized not so much the power to amass artefacts which might be impressively displayed to others as the power to reserve valued objects for private and exclusive inspection. (p. 27)

Pearce tells us that two-hundred years later “the Uffizi was donated to the state in 1743 by the last Medici princess” (p. 99). Francisco I used his donation as benevolent leverage over Florentine’s rich and powerful, the only “public” which had access to the Uffizi Gallery. It would be another two centuries before the entirety of the royal collection was made available to the general public.

In many ways, contemporary collecting habits continue the tradition of Wunderkammer. Amassed by a family, these collections are displayed to private visitors who are honored to receive an intimate tour of the objects by their hosts. When pieces, or even entire collections are donated to modern museums, the collector is lauded as Francisco I would have been celebrated. While certainly not entirely an effort to buy goodwill or as a vast display of wealth, we think of modern day donations to be multifaced, involving both altruistic and self-sustaining reasons (Kelly, 1998). Giving precious collections to the public is both enriching personally, and provides the security of tax-relief or other tangible benefits. Objects of lesser value are often offered as part of a packaged gift to museums (Buck and Gilmore, 2010), and such objects may be best

used in education collections, offering tactile exploration. These gifts strengthen the connections between the education collection and permanent collections through similar objects and the same donor, and create a way to thank donors for both the valuable objects and their contributions to education and meaning-making.

Touch Point—University Collections

Many early collections, such as Francisco I's eventually found their way into museums. Considered by many to be a forefather to modern museums, the Ashmolean Museum was originally sourced from Elias Ashmole's personal curiosity cabinet, as Wunderkammer were commonly known in England. The donation of his collection, predominately natural history specimens, established one of the first museums in European universities, and thus changing the nature and use of collections.

When held in personal collections, the ownership of the objects extends only to the collector. While visitors and guests were encouraged to touch and smell and otherwise explore the objects, ownership was always clearly in the hands of the estate-owner. With the dedication of collections to universities, ownership shifted from an individual to an institution. Levent and McRainey (2011) suggest that "perhaps one of the reasons why touch is so rare in museums is that in modern, commodity-driven consumer culture touch has been linked with ownership" (p. 63). The ability to hold, smell, and even taste the objects allowed for great, in-depth learning and encouraged students of the museum to learn directly from natural history collections.

The same is true for collections in Renaissance universities such as the Ashmolean, which was donated amidst controversy to Oxford University. While Elias Ashmole was the legal owner of the collection and the botanical collection inherited by him as bequeathed by John Tradescant, the collection was in the possession of

Tradescant's widow, who sold large portions of it off raising questions of whether ownership is held through law or possession (MacGregor, 2001, p. 16).

Several more collections were to join the Ashmolean, where Anthony Wood, antiquarian, would describe how the collections were studied by university professors and students (Clark, 1884, in Genoways and Andrei (Eds), 2008). Lectures in chemistry and physics were often held in the Ashmolean Museum, providing professors with physical specimens to use in conjunction with prepared speeches to educate students.

Though access to university museums was usually restricted to students and faculty, the public were permitted visitation on special days for a relatively nominal price. By the eighteenth-century, women were allowed visitation to the Ashmolean Museum, chronicled by a German visitor (MacGregor, 1983) who complained "even the women are allowed up here for a sixpence: they run here and there, grabbing at everything and taking no rebuff" (p. 62). Visitors, both domestic and foreign, were allowed access to the Ashmolean less than a century after opening, and physical touch, though monitored, was not prohibited.

Touch Point—Enlightenment and the Industrial Revolution

Given the connotation that vast collections mean vast power in the 16th and 17th centuries, it is natural that European monarchs established vast museums to house the royal collections during the social upheavals of the pre-industrial and industrial period.

Pearce (1992) notes that

...many of these collections are now dispersed, but separate or intact, they have served very frequently as 'feeds' for the national museums and for the developing of provincial museums, most of whose major collections come eventually from this kind of eighteenth-, nineteenth, and early twentieth-century source (p. 103).

The museum we now know as the Louvre was routinely founded and added on to by multiple French rulers, and is a good example of enlightenment and industrial museum habits.

Rulers during the Enlightenment certainly held large natural history, fine art, and other antiquities collections, drawn from earlier Wunderkammer. As knowledge rapidly progressed during the Renaissance and Enlightenment, “the idea of making the collections of the Crown (hitherto a privilege of the court) contribute to the advancement of the arts and sciences, is linked with the Encyclopedic movement in France- and also in England” (Bazin 1958, p. 40). Royal patronage of the arts and sciences was achieved primarily through access by artists and scientists to extensive collections, and this eventually spread to encompass access by the general public.

The Grande Galerie in the Louvre palace was re-designed as a public institution by revolutionists and opened its doors as the Muséum Français in 1793 to great success. As France moved to a 10-day work week called the *décade*, the museum allowed for 5 days of access for artists and other official work, 3 days for the populace, and 2 days for cleaning. The closed doors days for cleaning the museums were necessary as the museum was wildly popular with the public- so much so that the prostitution district moved its headquarters right outside the front doors (Alexander, 1983, p. 86). Collections at this time were drawn primarily from previous royal collections donated to the Galerie, and from personal royal property seized in the revolution. They were used incoherently as entertainment and education for all people.

England remained relatively unique among Europe at the dawn of industrialization given the monarchy never donated their entire collection to found a

national museum until well into the industrial period (Pearce, 1992). Many of the large world-famous museum in the United Kingdom are drawn from the personal collections of learned “curious men,” whom the French dubbed *curieux*. Sir Hans Sloane, whose collection eventually founded the British Museum, was a widely successful physician, botanist, and collector. Alexander notes that after Sloane’s death his will requested the British government purchase his entire collection for public display and for the benefit of all people. “Sir Hans Sloane’s British Museum pioneered as a national museum with a wide range of library and museum functions” (p. 39). As seen through the Library and Museum of Alexandria and the British Museum, libraries and museums are still very much intertwined at the end of the 18th century, and this trend will continue. Touch in museums, particularly in libraries, was monitored but permitted during this time, while the other museum collections on display were being prepared for increasingly limited access. Ownership was shifting towards the institution.

Touch Point—Modern Museums

Conn (1998) states that “American museums grew alongside American cities” (p. 6) which akin to the British Museum, draws from the personal collections of citizens. By the 19th century several world-changing trends were transforming society. The rise of the United States as a legitimate nation and beacon of freedom and opportunity attracted many, mostly European, immigrants to North America.

As American cities prospered and attracted more residents, museums were expected to provide a space for cultural assimilation and presentation of acceptable society. Immigrants and other lower-status citizens were encouraged to visit museums for the first time in the mid to late 19th century as an attempt to turn them into “well-mannered citizens of the United States” (Conn, p. 6). With an influx of visitors, many of

them untrained in what we now speak of as *museum literacy*, or the ability to navigate and respect museum collections, museums first feared for the safety of their collections. While collections had been carefully handled by visitors and scholars in museums throughout previous centuries, the 19th century saw a mass-influx of glass cases, signaling a paradigm shift in display and theory.

Glass cases, vitrines, and dioramas prevented visitors from getting too close to an object, and in turn translated intellectual control and ownership firmly in the hands of the elitist museum and curator. Whereas ownership was before individually controlled and touch was granted on a case-by-case basis, power has now been irretrievably shifted to the institution. Carefully arranged in decadent halls, collections were interpreted by a curator or another academic, and presented to the public without too much of the distracting text that Conn so dislikes. The cases and their arrangement, Conn continues to argue, “made it possible for the visiting public to understand the meaning of museum displays” (p. 8). Cases, then, educated the public not only about the world and collections themselves, but also provided instruction on the correct order of museums, and therefore society. However, Pearce (1992) argues the contrary that Victorian-era glass cases would have prevented visitors from properly interacting with the objects. Not only will glass cases prevent touch and close observation, “such glass does not have a plain surface and so up to seventy per cent of its surface would give some viewing distortions” (p. 105). Museums would have to wait until the 1920s and the World War I invention of plate glass to source clear and non-obtrusive glass cases for the collections.

As 19th century museums in the Western world grew larger and more sophisticated alongside their host cities, they took on many public service roles. Conn (1998) describes that “museums functioned as the most widely accessible public for a to underscore a positivist, progressive and hierarchical view of the world” (p. 5). Expansion to serve the general public (which at the time was considered overwhelmingly middle and upper class white folks) brought about many changes with the accessibility of objects. More people now have access to material culture and history first hand, and with that purveyance came responsibility. Museums became increasingly concerned with “convey[ing] a narrative” (p. 8), and the objects are now seen as vulnerable and irreplaceable. In the date, glass cases took the museum world by storm, protecting the objects from prying hands, and also preserving the authenticity of the curator’s narrative. The shift to the narrative, quite natural to the order-obsessive Victorians, help shape museums to be the educational institutions we know today. Conn stresses that “knowledge was always understood to be what museums had to offer but also that knowledge was what they were charged to create and what they were obligated to provide to a visiting public” (p.11). Preservation of valuable objects became a primary motivator for museums, and touch of objects was restricted to well-trained glove-wearing curators and registrars.

Return to Touch

Museums are still using objects to tell a story, convey a narrative, and hopefully impart knowledge. Historically, museums have been concerned with both care for collections and visitor engagement. Museum educators have only recently come into the fold, en masse on this important endeavor, changing and challenging the way we view engagement and accessibility.

John Cotton Dana and the Newark Museum

John Cotton Dana, largely recognized as one of the first influential museum thinkers and educators, began his long career in law, though he quickly switched fields to become the librarian for the Denver Public Schools (Alexander, 1983, p. 383). Dana quickly transformed the library to be community-oriented, using the collections as a source for community service.

After spending over a decade at the Denver Public Schools and Springfield Public Library, Dana accepted the position for which he is now famous at the Newark Public Library in Newark, New Jersey. It was at Newark that Dana tested and refined his theories of community service for the public through the library. Public collections, Dana held, should be of direct benefit to all members of society, especially those who are most disadvantaged. Some of his radical beliefs led to the first children's areas in libraries, complete with small tables and chairs, and his refusal to censor or ban books. He also believed that books that were not servicing the public, sitting on shelves without being read, should be deaccessioned or moved to an off-site storage area. A collection's first priority should be to actively serve the community, not held for the sake of preservation.

Dana began exhibiting local artwork and crafts in 1903 at the Newark Public Library, an effort that quickly grew to the assimilation of the Newark Museum Association which, under Dana's advice, purchased the collection of George T. Rockwell. Alexander (1983) states that by 1909 Dana was:

applying the same standards of community service to the museum that he had demanded from the beginning for his libraries. In his view, museums were not to put their emphasis on acquisition, but on use- exhibition, interpretation and community service. Their main audience should consist not of the educated, the privileged, the elite, but of the whole community. (p. 390)

Progressive ideas for the function of both library and museum collections was drawn from new museum theories originating with George Brown Goode (Alexander, p. 393), and greatly expanded on by Dana. Dana (1909) proclaims, as quoted in Genoways and Andrei (2008), that the new museum method will not blindly collect objects for the sake of power or ownership:

Nor does this new museum method aim at the acquisition of rare and priceless objects with which to fill rows of cold and costly cases, all peculiarly well fitted, if they do nothing else, to aggravate the foolish pride of the thoughtless citizen; nor at the acquisition of so many objects within any one field as to make a museum distinctly a museum of a certain kind. (p. 138).

Collections and the museum which cares for objects are not meant to be encyclopedic if they are not being well utilized—otherwise collections are created for the curator’s pride and not for the community’s benefit.

This is a direct split from the vast research collections of the previous centuries. Dana attempted to create the first true education collection, where the objects are used explicitly to educate and entertain the public. Dana believed that the ideal museum would create collections drawn from local citizens, to support their work, lives, and beliefs, as quoted in Alexander (1983):

This staff of [trained museum] workers surveys the city and its life and industries. It discovers what it produces and what it uses; and the things produced by it and the things used by it are by the museum staff gathered in typical examples into the museum. By these are placed examples, from other cities and other times, of kindred things, sometimes originals, sometimes copies- and often merely pictures of them. It arranges these for display and labels them freely and describes them in leaflets, and, on occasion, sends groups of them to schools, factories, and storerooms in all parts of the city. And thus it says to the citizens, ‘Come and see, We think you will find that, as a result of such a study and daily use of what we can show you in your museum or as we can help you to make in your homes and factories, your products will sell better and at higher prices, your homes will give you more pleasure, your knowledge of and sympathy with the

peoples of other lands and other times will be broader and deeper, and you will get more enjoyment out of every working hour.' (p. 329-393).

Dana's vision of an educational collection drawn from local citizens is still considered radical by many today. His contributions to the field of museum education are vast and varied, and many of his practices are still best practices for the field.

Shortly after Dana's Newark Museum opened in 1909, he hired Louise Connelly as the educational advisor. She was responsible for conducting market research on the needs of local public schools, and helped to create a Lending Department where schools could borrow objects, slides, and informational material on the collection. Dana also was a revolutionary as he created personal docent-led tours by community members and for community visitors. Dana and Connelly also included special tours and events for children with visual impairments, aiming to include all members of society in the museum audience (Alexander, 1983, p. 393-397).

Dana is to the museum field as Dewey was to public education: often a nuisance and with undeniably progressive ideas, both men contributed to the way we view museum education today. Dana was also the first to create an explicitly educational collection, where the primary goals and objectives were to provide educational resources in a manner traditional, research-based collections cannot. Pearce states that "museums are an important part of the way society makes its history" (p. 233), and this is truly evident in the museum Dana envisioned.

Education Collections Today

Education collections, such as Dana's, are often found in natural history and history collections. Art museums have a much more difficult job of engaging collections in innovative and accessible ways due to their nature of inflated art market prices and

the value of visual material culture. Fine art has always been a pricey commodity; cultural wealth is associated with monetary wealth (Pearce, 1992, p. 236). As discussed earlier, glass cases marked a paradigm shift as they were introduced to museums to protect objects from the rapid influx of eager museum visitors, and rightly so. Collections must be protected, and they must also educate. There is little reason for people to have tactile access to the Mona Lisa to learn about Leonardo da Vinci's painting techniques.

Education collections are typically used by art museums to serve functions other collections most certainly cannot. Many museologists (Pearce, 1992; Alexander, 1983, Bennett, 1995; Keene, 2005) agree that historically there are "good" and "bad" collections based on the societal norms of the time. The same is true today.

Understanding the social history of collections "enables us to understand better the various kinds of bias inherent in our collections" (Pearce, p. 116). Objects which no longer fit the "good" collections, through lack of provenance or functionality, may find a good home in education collections, as will be discussed later with reference to the Harn's education collection/These objects are invaluable for hands-on learning as they bear little risk if harmed or destroyed, but carry disproportionately high benefits if used innovatively in education.

Education collections serve many purposes, and use their objects in innovative ways. [M Shed](#), a local history museum in Bristol, UK, is located on the disused docks of the River Avon. It includes authentic objects on display and in storage, telling the social history of Bristol. While most of these objects cannot be touched, the museum has used some objects in innovative and educational ways. For example, there are many photographs of how steam engines were used in the Industrial Era to transport people

and goods from the docks to the city. Though the photographs are behind glass, an authentic steam engine is on display outside on the docks. Visitors to M Shed can ride the steam engine during special events, and experience first-hand Victorian worker's daily objectives. Using objects in innovative ways is a hallmark of education collections.

Many museums use technology in partnership with education and permanent collections to promote use of objects. Online resources such as the [EdCollections](#) at the [Newseum](#) blend primary news sources, artifacts, and lesson plans to engage schools in learning and teaching. EdCollections are accessible by anyone with access to the internet, and use their primarily textual collections in engaging ways to support learning in schools. Other museums such as the [Cleveland Museum of Art](#) develop entire spaces to engage audiences. [ArtLens Gallery](#) uniquely uses touch-screen technology to promote access to the collections, both objects on view and those in storage. The interactive screen is paired with other activities, many of which promote touch, both haptic and tactile. Technology in both instances supports, but does not replace, the value of object-handling while restricting access to the original works.

Some museums make objects which have little provenance available for physical touch. [The British Museum](#) offers volunteer staffed [hands-on desks](#) daily in five of its galleries. These stations are available to anyone who comes by, and provides visitors with the unique opportunity to touch objects similar to those on view. The friendly volunteers who operate the experience are knowledgeable and can answer questions about objects in the gallery, often through tactile meaning-making. This experience promotes greater access to collections and provides an intimate experience for visitors.

Context—Educational Theory

Macfarlan (2001) suggests that “little thought has been given to museum education collections primarily because their education potential and their ability to be used by visitors to engender concept understanding goes unquestioned” (p. 167). This is likely true, or at least likely believed. MacFarlan also raises common issues education collections face, and suggests that perhaps that lack of interest and time lead to lack of discussion and maintenance of education collections. MacFarlan, along with Johnson (2004) are the only scholars to publish research and advice on education collections based on a case study conducted at the Lubbock Lake Landmark in Lubbock, Texas.

MacFarlan presents two centralized problems surrounding education collections: issues with exhibition leading to education, and issues with administration. To combat these issues, MacFarlan and Johnson suggest a five-step plan to rejuvenate education collections, making them relevant to visitors and the permanent collections. These organizing stages can be summarized as:

1. Create a theme
2. Conduct collection assessment and deaccession irrelevant objects
3. Catalog complete collection
4. Critically arrange objects for best visitor interaction, and,
5. Properly house and preserve objects.

These five organizational stages work well for education collections especially those drawn from the scientific disciplines, such as natural history, and should be adapted to best suit the unique needs of each collection. My list of the characteristics of effective education collections which lead to best practices will be discussed in Chapter 5.

Informal Learning

Museums are commonly seen as indisputable powerhouses for informal learning research (Falk and Dierking, 2012). Educators typically group types of learning under two umbrella-terms, which define the environment in which learning is taking place: formal and informal learning. Formal learning is essentially in-school learning. Structured and didactic learning objectives are quintessential of formal learning environments, and can be empirically evaluated. These learning objectives and their intended outputs are typically given to students, and the process of learning becomes contractually formalized. Informal learning on the other hand has a more contested history. Many researchers (Dierking, 1991; Hein, 1998; Eshach, 2007) find the distinction between types of learning to be blurred and some (Falk and Dierking, 2012) prefer the term free-choice learning. Informal learning, the term I will be using in this thesis, has been defined by the National Research Council (2009) as “learner motivated, guided by learner interests, voluntary, personal, ongoing, contextually relevant, collaborative, non-linear, and open-ended” (p. 11). Though this lengthy and adjective-heavy description is cumbersome, it does accurately represent the breadth of motivations for learning that informal learning encompasses.

Dewey (1938) is a prime example of what educational philosopher Jarrett (1969) describes as the “direct attempts” (p. 2) approach to philosophy, free from the analyst influence and preoccupation with defining terms in a straight-forward manner. When discussing the difficulty differentiating types of teaching and learning, Dewey states that “perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the particular thing he is studying at the time” (p. 48). Adversely, the feminist approach differentiates between formal and informal pedagogies. Gore (1992) states that “rather

than distinguishing between pedagogy in the disciplinary field of education and elsewhere, I distinguish pedagogy that occurs from within from that which occurs from outside formal educational institutions” (p.xii). While it can undoubtedly be argued that museums are historically and categorically educational institutions, Gore draws a line between appropriate pedagogies for formal school environments and informal learning environments, under which fall museums. Informal learning is most famously championed through Falk and Dierking’s (2012) Contextual Model which provides an epistemology, learning theory, and pedagogy and will be discussed shortly.

Object-Based Learning

Museums are the environment typically associated with informal learning, though it can take place almost anywhere. Museums are also the location of much object-based learning, which incorporates multiple sensory processes during meaning-making and learning. Object-centered learning, a term coined by Paris (2002) entails

A transaction between object and person that evokes and allows meaning construction. Learning about, with, and through objects involves hands-on learning and manipulation. Being in the presence of an original object can be uplifting. Talking about your own reactions to objects can be edifying. Responding to an object can deepen the experience. Authentic, unique, and first-hand experiences with objects stimulate curiosity, exploration, and emotions. These are features of an object-based epistemology... (p. xvi)

Object-based learning, according to this definition, could take place in either formal or informal learning environments. However, museums are by nature institutions where object-based learning represents the primary model of learning.

Learning directly from objects is naturally facilitated through touch, though the other senses are just as involved. Art museums must be especially careful in restricting physical touch and handling of objects by visitors, and staff alike. Thankfully the curator and neuropsychologist team Bacci and Pavani (2014) state that “although surface touch

has been banned from museums, other bodily sensations are not” (p. 18). Other senses, such as proprioception, or the body’s perception of sense, such as touch, is often as powerful as physical touch itself (p. 19). Therefore, where touch cannot be allowed, other sensations, such as proprioception, sight, or smell, can be encouraged along with the imagination to enhance exhibitions for all senses.

Neurological studies suggest that the human brain is metamodel (Lacey and Sathian, 2014), where touch and vision are intimately linked. Encouraging touch may also lead to increased and more focused sight exploration. The authors, both researchers in neurology and multisensory processing, “recommend that programs allowing visitors to handle objects should be extended” (p. 11). Touching authentic, but historically removed, objects would be ideal according to these neurologists, though replicas and tactile drawings are also recommended touchable objects.

Levent and McRaine (2014) support Lacey and Sathian’s call for touchable authentic objects. Intimately interacting with authentic objects, they argue, is closely tied to vindicating a cultural worldview. They assert that “senses are much more than natural perceptive instruments given to all of us by nature; they are products of cultured, convention and historical contracts” (p.78). Our senses, such as touch, are not only neurological occurrences, but are culturally interpreted intuitively.

Object-based learning has led to increased knowledge and appreciation for different modalities of learning. Touch is largely held to be beneficial to the museum experience for all audiences (Classen, 2005; Chatterjee, 2008; Pye, 2008; Candlin, 2010; Levent & Pascual-Leone, 2014). Most research on the varied benefits of object-based learning focus on specific audiences such as children (Paris and Hapgood,

2002), the elderly (Rowlands, 2008), the visually-impaired community (Axel, 2002; Weisen, 2008), and formal higher education (Adams, 2015; Chatterjee & Hannon, 2015). Focus on special members demonstrates museum's "drive to include" (Levent & Pascual-Leone, 2014, p. xviii) currently explored by contemporary museums and artists.

The worldwide movement to include people of all abilities in public spaces, spurred by the introduction of the Americans with Disabilities Act (1990) in the United States and the Disability Discrimination Act (1995) in the United Kingdom, led to increased awareness of the needs of museum audiences who have sometimes ignored even the most basic needs of visitors. Many reforms in museum education and visitor studies took place during the 1990s, progressing our understanding of informal and object-based learning within the museum. By increasing accessibility for visitors with various abilities, including the non-sighted community, museums have enhanced exhibitions, programs, and events for all visitors, though in 2017 these protections in the United States of America at least, are threatened by the [ADA Education and Reform Act of 2017](#) (HR 620), sponsored by Rep. Ted Poe (R-TX).

Paradigm Shift—Incorporating Education in Museums

Museums are undeniably the institutions where most informal and object-based learning takes place, and have therefore taken up the torch to understand how people learn within their walls. Museums maintain a "self-conscious place in the American educational landscape" (Rowe, 2002, p. 19) though why they are central to learning may not be readily expressed by the public, it is felt. There have been numerous studies researching how the public envisions trustworthiness in museums, the most cited being a 2001 study conducted by the American Alliance of Museums (AAM, then known as the American Association of Museums). The study, as cited in Merritt (2015) found that

87% of participants viewed museums as “one of the most trustworthy sources of objective information” over the government and business sectors. The Institute for Museum and Library Services (IMLS) conducted a study in 2006 on visitor use in museums and libraries. They discovered that visitors rated the “trustworthiness of display/items or information about them” as a 4.62 out of a possible 5-point scale (p. 42). Art museums ranked an above-average score of 4.67 for this category.

However, other surveys have not portrayed such optimism. The Edelman Trust routinely surveys “the state of trust” in the three main sectors worldwide: government, business and non-profits. In 2017, the Trust reported that global trust in non-profits, which incorporate museums among other social service organizations, fell 2% to 53% of people survey significantly trusting non-profits (p. 4). In the United States alone that number was below 50%. While the Edelman trust barometer records global, macro-level phenomenon and therefore may be interpreted by museums as having little relevance, it does illustrate the need for an updated, objective survey.

With this evidence, American museums may be viewed as trustworthy educational institutions, moreover they are aware of this fact. Rowe (2002) has suggested that the goal of the mighty informal education institution may not be that visitors learn something, but rather than visitors construct their own meaning (p. 20). As seen previously through the history of collections, a long-divided paradigm exists regarding what museums should teach, who has the intellectual authority to create knowledge, and who has physical access to the source of that knowledge.

The landmark publication *Excellence and Equity* (Hirzy, 1992) circulated by AAM challenged museums to re-evaluate their education departments and called to make

them central pillars in the museum. Over the next 25 years multiple authors (Falk & Dierking, 1992; Weil, 1999; Hooper-Greenhill, 2007) radically changed the philosophy propelling museum thought, bringing visitor service onto more equal footing with collections care and exhibition. Education is now present at the intellectual table.

Educational Theory

Learning theory is not a new topic, but has been greatly discussed and theorized by museums after the mass inclusion of education departments as called for by the 1992 exposé *Excellence and Equity*. Long before, Dewey (1938) radically suggested that not all experiences are, or should be, educational. Contrary to realist philosophers, Dewey disputed that humans learn from all their experiences all the time. Some experiences might be purely entertaining. Learning, therefore, must be intentional.

A well-construed educational theory is made of three parts: epistemology, learning theory, and pedagogy. It is my belief that where many museum educators err when developing education plans and goals for their museums, is to overly focus on pedagogy, and neglect to establish a baseline epistemology and learning theory from which pedagogy can reference.

Epistemology, or the study of knowledge may be conceived of as a continuum, with Plato's realist perspective that knowledge exists and contains absolute truth on one end, and Berkeley's idealist perspective that all knowledge is relative and therefore no one can gain control over it on the other end. Dewey, and many other constructivists such as Friere and Hein, fall to the right side, or the idealist end of the spectrum. Dewey believed that knowledge is active, and is construed by the learner based on previous experiences (1938). His constructivism has laid the foundation for almost 100 years of museum educational theory, culminating most notably Falk & Dierking's Contextual

Model of Learning (2012). Education collections support intentional and individualized meaning-making, and thus draw from Dewey and friend's idealist concept that knowledge is relative and can be constructed.

Knowledge and meaning making, as Rowe (2002) describes, are not quite the same. Knowledge is part of a larger history, and assumes some level of truthfulness generalizable to all people. Meaning-making is a more intimate and personal concept, and allows the meaning maker to ignore conventional or accepted knowledge to create their own personal significance of the material to be learned. Education collections, while retaining the capacity to teach knowledge, typically will focus on meaning making, drawing connections between the objects and visitor's personal lives. It is meaning making that is more relevant to most visitors- the idea of what does this mean to me?

Hein (1998) summarized and condensed some of the most popular learning theories and epistemologies of the late 20th century into an educational theory appropriate for how museums theorize visitor learning. By combining well-known learning theories such as Kolb's (1984) Learning Style Inventory, and McCarthy's (1972) 4MAT System, Hein (1998) introduced a four-mode system of learning. The four modes of learning he explores are didactic, discovery, stimulus-response, and constructivism.

Constructivism is a learning theory which demands the learner actively participate in the learning process, adding the stipulation that the knowledge acquisition is not the goal of constructivist learning (Hein, 1998; Falk and Dierking, 2012). Constructivists believe in an epistemology where learners make meaning from what they are learning, based on their previous experience. Rowe places museums firmly

within the constructivist mode of thought, using esteemed social psychologists and philosophers such as Vygotsky (1981), Luria (1982), Leont'ev (1981), and Hein (1998) to support the idea that meaning-making in museums is superior to knowledge acquisition. Museums, then, must balance providing a framework enabling visitors to construe meaning with offering academically rich objects and information.

Constructivism, and the idealist epistemology behind it stating that all knowledge is relative, can be a frightening thought for museums. Since the Industrial Era, museums are not willing to allow all meaning making and learning to be solely in the hands of the visitor. Falk and Dierking's *Contextual Model of Learning* (2012) balances the constructivist approach that humans build knowledge over time based on their past experiences, and the ability for museums to influence learning. The contextual model states that three interwoven contexts- the personal context, the physical context, and the sociocultural context- interact to facilitate learning in the museum. The personal context is grounded in constructivism, stating that the visitor's "pre-defined set of interests, beliefs, needs, and often anticipated expectations for what the visit will be like and result in" (p. 27). The physical context, or the museum itself with all its objects, exhibitions, and rest areas, can be influenced by staff who anticipate the visitor's needs. The sociocultural context has two dimensions: the museum and the visitor. Museums are culturally situated in a post-colonial society, and typically project their own societal ideals through programming and exhibitions. Visitors likewise are influenced by the social and cultural backgrounds they have experienced, and that worldview will affect how they view the museum and its objects.

There are many ways museums balance between education and entertainment, and the contextual model of learning has profoundly influenced the field's ability to negotiate this divide. The past 25 years has seen an influx in the casual entertainment aspect of museums, notably alongside the rise of education departments in museums. In the 1980s, education departments began to gain prominence as curator's jobs became more focused on the academic side of exhibition planning and educators became responsible for interpreting the curator's exhibition for the general public. Over the next decades museum education would change drastically from a behind-the-scenes interpreter to the dynamic exhibition planning and development and interactions with the public. The ideas and tenants of *contextualism* are now common within museums, even the slow-to-change art museums. Many exhibitions still attempt to accurately depict carefully researched and scholarly information, but museum staff seem to have accepted that visitors will make their own meaning from the exhibition regardless of how they are guided through it.

Education collections, when used to facilitate deeper understanding, fit well into the contextual museum. Education collection objects encourage visitors to make their own meaning while handling them, and often are without appropriate provenance or authenticity removing the temptation to convey absolute truth. Education collections often represent a tactile mode of learning for visitors. The education collection at the Harn Museum of Art used in this study effectively borrows tenants from contextualism, encouraging visitors to make their own personal meaning in the galleries. The education collection is utilized as one way to facilitate meaning-making among visitors, which is skillfully tied back to learning in the museum by BSC Assistant Paige Willis. The

educational theory to which the Harn most closely subscribes may be defined as a balance of post-modern epistemology, that knowledge is relative but some is more valuable than others, contextual learning theory, and interchangeable pedagogy depending on the learning situation. The education collection requires a pedagogy that incorporates facilitated meaning making and authority given to the learner. In contrast, a typical pedagogical approach for exhibitions at the Harn is for the curator to either retain or at best share authority of knowledge with the visitor, while simultaneously encouraging personal meaning-making.

Background—The Hands-On Education Collection at the Harn Museum of Art

The Samuel P. Harn Museum of Art (Harn) was founded in 1983 through a generous \$3 million gift from the family of Samuel Peebles Harn (1893 – 1957). Harn's widow, three daughters and their families pledged what was then the largest gift to date received by the University of Florida, and dedicated the funds to an art museum in honor of their beloved patriarch and local business owner, Samuel. Since the museum opened its doors in 1990, it has served over two million visitors through internationally-recognized exhibitions, state-of-the art programming, and innovative community engagement.

The mission for the museum states:

The University of Florida's Samuel P. Harn Museum of Art collaborates with university and community partners to inspire, educate and enrich people's lives through art. The museum brings the joy of experiencing great works of art to diverse university, community, national and global audiences through relevant and enlightening art collections, exhibitions and learning opportunities.

Today the Harn continues to pursue its mission serving the University of Florida community which boasted 54,854 students in Fall 2016, the Gainesville community with a population of 131,591 permanent residents, as well as many national and international

visitors to the university and city (University of Florida, 2017). As a mid-sized museum with 61 paid staff, 18 interns and 27 volunteers in August 2017, the museum cares for over 10,000 objects in five major collecting areas: African Art, Asian Art, Contemporary Art, Modern Art and Photography. The building includes eleven exhibition spaces, a multi-use auditorium frequently used for special events and community exhibitions, seven gardens including an outside sculpture garden, a university-controlled café, two versatile classrooms which can be joined to create a large learning space, and the Bishop Study Center (BSC), an interactive space and research library open to the public. Admission to the museum has been free since it opened in 1990, and a thriving free membership program founded in 2013 has opened new channels of public accessibility.

The Education Collection

Dr. Rebecca M. Nagy joined the Harn as the Director in 2002, and shortly thereafter established the Education Hands-On Collection in conjunction with Susan Cooksey, the curator for African Art and the then-Head of Education Bonnie Bernau who effectively started the Education Department in 2001. Before this time, the Harn could be considered an intellectual elite art museum where the prevailing concerns were for exhibitions and collections growth, with little thought given to visitors. The education collection was established by the young education department to create a way for visitors to more closely interact with the permanent collections through tactile observation and handling in ways that would be highly inappropriate and dangerous for the permanent collection objects. The first objects were transferred from the African Art collection which were in no condition or provenance for exhibition, but Cooksey recognized they have relatable educational value to similar permanent collection objects.

Objects were specially purchased and the education collection actively grown from 2002 – 2010. Many of the objects purchased during this time are from West and Central Africa, Dr. Nagy's area of expertise, and Southeast Asia, where several knowledgeable Harn docents and volunteers frequently traveled. All purchases and accepted donations were made with careful consideration, with decisions based on how well the educational objects would reflect and enhance the permanent collection. Many of the collection's most popular objects, several of which were used during this study, were accessed during this time.

Early uses for the education collection included *always-on programming* where knowledgeable docents and staff, such as Ruth Sheng who helped grow the collection, would facilitate interaction. Other uses included incorporation of objects into the Educator Borrowing Program where docents would take curriculum, slides of exhibitions, and often education collection objects to schools. The docent would present the material, themed around a current exhibition and tied in to Florida standards and curriculum, then leave the boxes with the teachers for a week of continued study.

Educators responsible for maintaining this collection have continued to be actively growing the collection after 2010, though at a more leisurely pace. Storage space for the objects has become sparse, and sometime after 2010 the records became confused. Some objects had gone missing, others had mysteriously appeared. As an employee in the Bishop Study Center from 2014 – 2015, I cataloged the education collection and began to note some of the effective ways the collection is used, as well as some of the issues incurred. During that year, I identified several core threats facing the collection, the prime being lack of safe storage containers for the objects. The

education collection objects are not under the purveyance of the curators from the five major collecting areas, nor are they a primary responsibility for the registration staff. Rather, this collection is uniquely housed within the museum's education department, and is therefore stored in the education storage area which had previously flooded and damaged several objects.

I left my position as the Bishop Study Center Assistant in August of 2015 to return to the University of Florida and pursue a master's degree in museum studies. My first year I worked as a registration intern at the Harn, re-housing the education collection. The most pressing issue when I began my internship was to conduct a complete inventory of the collection, which totals 236 objects, 10 of which had no provenance, and 4 of which were lost. Using archival cardboard, archival glue and tissue, I built 24 boxes to house the individual objects safely and securely in the collection. The entire collection was built to be housed in archival polypropylene boxes all individually numbered and photographed with objects in situ, as seen in images in Appendix E. Polypropylene was chosen as the ideal box material due to flooding issues in the past. It's durable hard exterior creates the perfect waterproof container, while an intricate nesting of blue board² trays allowed for the greatest possibility of objects to be stored in each standard polypropylene box. Of the original 236 objects, I successfully housed all but 35 objects safely, leaving only large textiles folded in their original large blue board boxes. Unfortunately, there would not be enough funds that year to safely

¹ Blue board is the colloquial term for archival cardboard. It's surface is smooth and firm and is often a gray-tinted blue, from where it gets its name.

store the remainder of those objects. I presented on this work at the 2016 American Alliance of Museums annual conference during the Emerging Innovators session.

The hands-on education collection at the Harn has been a comfortable staple in the Bishop Study Center since 2002. The Bishop Study Center (BSC) has seen many staff members over the 15 years of its existence, each adding to, caring for, and facilitating public use of the collection in different ways. Elizabeth King, who has managed the collection since 2012, has made significant changes to the BSC and has radically reconsidered how the space can be dynamically used by the Harn's visitors. In the past five years, King has created a cozy and easy-to-use area for the academic research library, purging the collection of many volumes which do not pertain to the Harn's collecting areas. She has also reconfigured the welcome desk, moving it from the center of the room to the front, allowing visitors a more personal point of access. Children's games and books were expanded, as well as the interactive family activities available for pick-up within the BSC. Additionally, in-gallery activities have become more innovative and attractive to families. The hands-on education collection remains an always-on staple of the BSC.

Use of Harn Education Collection

The hands-on collection is currently presented in 6 drawers in the center of the BSC, and typically contains between 6 and 15 education collection objects. The objects do not currently have any visible signage advertising them, and are only listed briefly on the Harn's website. Lack of signage for the collection despite its central location in the BSC has not led many visitors to open discovery of the objects. Indeed, even during facilitated use, many visitors are uncomfortable touching the objects. This may be due to an ingrained perception that things in an art museum are not meant to be touched (no

matter how many times the nice lady says you can) or it may be due to lack of advertisement in the space stating the collection, its purpose, and its ability to be touched.

Curious visitors may open the drawers themselves, where they will find beautifully designed labels with historic information about each object, probing question prompts and provenance information. The BSC Assistant, Paige Willis, often directs families and visitors to these drawers, encouraging visitors to open them up and explore their contents, much like the Wunderkammer of the 16th and 17th centuries. As visitors open drawers, Willis encourages them to hold and handle the objects, walking them through conversations around the pieces. Some of the conversations turn to issues of conservation- one of the teapots frequently kept in the drawers has a broken handle. Willis uses the broken object as an entry point to discussions on the importance of proper object handling and conservation with children, reminding them that these drawers are a special place in the museum where art can be held and felt. The children intuitively understand the spatial difference between art handling in this room, and refraining from touching objects through the double doors into the museum.

Willis also uses the objects to make personal connections between the visitor and the art. When exploring pottery, she might ask the visitor what ceramic objects are used in their homes, and open discussion on how ceramic pottery may have been used in the past. Using careful facilitation, Willis guides visitors to uncovering personal strands connecting their history with the history and use of the object they are handling.

Another way Willis interacts with visitors and this collection is to explain the historical significance of the education collection item, and directly link it to an object the

visitor can go view in the museum. The education collection includes five brilliant kente cloths, fabrics woven by the men of Ghana and worn ceremonially to show dominance or tell a story. Each pattern and color has a different folk-story or meaning behind it, and when woven together, are often worn as a political statement. Willis often tells of the significance of kente cloth to visitors and links it to a contemporary piece on view. El Anatsui's *Old Man's Cloth* (2005) is a large wall sculpture made of discarded metal alcohol bottle caps and ties. His tongue-in-cheek reference to the traditional kente cloth of his native Ghana is evident in the ways the large rectangle flows and bends. Willis helps make the connection between a beautiful, but often confusing, contemporary work, and the traditional kente that can be held, felt, and even worn by visitors.

Education collection objects act in ways their sister permanent objects in the main galleries cannot- they provide a tactile and personally facilitated interaction. The objects in the galleries are authentic and representative of the best of their kind, which the hands-on collection does not try to imitate (though some of the objects, such as the kente, are indeed authentic and representative). For objects which link back to the education collection, a greater level of understanding and appreciation may be found in the tactile learning experience found in the Bishop Study Center.

The Harn also incorporates these objects, and others from the education collection, into several special programming opportunities throughout the year. Every second Thursday the museum stays open late for its monthly *Museum Nights*, where hundreds of community members from both Gainesville and the University of Florida gather for food, fun, and art. Short and sweet tours are available throughout the galleries, dance performances inspired by the collection gather large crowds, art-making

stations are set-up, and local organizations and clubs are invited to share with the community. Each month has a theme related to a specific exhibition, and occasionally the hands-on objects are featured. On nights where the African galleries, or contemporary gallery is featured, for example, several kente will be taken into the gallery and stationed next to *Old Man's Cloth*, or traditional kente. Visitors for this special event then can learn from an expert, and touch or wear real kente while looking at a museum piece they cannot access through tactile exploration. Events bringing the education collection in to the gallery are popular with visitors and are often incorporated.

Each year the Harn hosts *Access Art*, an event which specifically invites community members who are blind or visually-impaired to come and visit the museum in a tactile-friendly event. While audio tours featuring verbal descriptions are available year-round, *Access Art* provides an opportunity to engage with the art museum in ways not usually feasible. The event is led and facilitated by volunteers who read verbal descriptions aloud, and encourage participants to feel a tactile representation of the work they cannot see with their eyes. These works, which are marvelously detailed and meticulously made, are available to touch in the Bishop Study Center for the remainder of the year, and are unofficially (not accessioned) part of the education collection.

Smaller events also frequently make use of the education collection, particularly events facilitated by docents. Tot Time is a program for preschool-aged children and their families held at the museum twice monthly. Docents lead small groups on a themed tour of the museum which culminates in the classrooms downstairs for an engaging art making activity. The Harn's docents are well-versed in the education collection as part of their rigorous year-long training, and often stop by the BSC to

borrow an object for their tour. When leading a tour about exploring nature through art, for example, docents often request to use a wooden butterfly stamp from Sierra Leone. Docents might demonstrate how the stamp would be used to make some of the intricate textiles in the gallery, or use the butterfly motif to search for butterflies in paintings. The docents are effective at tying together threads from multiple works of art, using the education collection objects as a common denominator on their tour of the museum.

These events and more are examples of how the education collection fits into many areas of Harn programming. This is only effective due to fastidious nature of the collection adhering to the mission of the museum, found in Appendix E. All programs, exhibitions, and collections act out the mission for the community at the Harn, and the education collection is no different, making crossover uses of the collection feel both natural and rich. There has been much written about using touchable objects for special events such as these (Axel, 2002; Candlin, 2004; Schwartzner, 2006; Chatterjee, 2008; McGlone, 2008; Adams, 2015), but very few examples of the day-to-day availability of education collections for the general visitor. This study sought to understand why the casual visitor might choose to interact with an education collection that is not well-advertised or available during a featured event.

The Harn creates many outlets for fulfilling its mission, and educating and engaging the various communities which visit its galleries. One such small, but important outlet is the education collection. By making the collection an *always-on* activity available to all visitors, the education collection has the capacity to bring visitors together, challenge their ways of thinking, provide new and invigorating information, and encourage a connection to the permanent collection not otherwise available. The Harn

is truly a leader in mission-centered education collections, and the unique challenges and opportunities presented by this collection make it the perfect testing ground for better understanding education collections.

CHAPTER 3 METHODS

Goals of the Study

This study examines the ways in which interactions with education collections affect the museum visitor experience, using Falk & Dierking's (2012) Contextual Model of Learning as a framework for understanding the complex set of influences and perceptions that make up the visitor experience. Chatterjee (2008) states that "the value of object handling in the heritage context is not well understood despite the weight of anecdotal evidence suggesting the benefits of physical interaction with objects" (p. 1). Despite much anecdotal evidence, the effect of object handling on visitor interaction has yet to be studied empirically. This study provides qualitative evidence to support Chatterjee's claim that tactile object handling has a positive effect upon the visitor's experience in the museum. Though the study is limited by its sample size, data can be applied to better understand the education collection at the Harn, and will be used to identify a series of characteristics that I suggest create a well-intentioned and therefore well-utilized education collection.

Setting

As discussed earlier in Chapter 2, the Harn Museum of Art (Harn) in Gainesville, Florida was chosen as the research site. This museum was chosen because it contains a clearly designated education collection which is housed and on display in a separate area from the permanent collection objects. The education collection objects are curated and displayed in pull-drawers in the Bishop Study Center (BSC), a multi-use space for visitors. Paige Willis, the educator who staffs the BSC, facilitates all use of the education collection and provides meaningful prompts, conversation, and information

about each object as part of her regular job duties and taught during her training. This facilitation is what makes the education collection at the Harn unique and effective, and made this education collection excellent for the study.

For the duration of this study, the objects in the hands-on drawers remained constant. Available for touch were metal relief sculptures of Avalokitesvara, a Tibetan deity, and Ganesh, a beloved Hindu deity. Two replica Tang sancai sculptures of horses which were made for the tourist trade in the 21st century, but here represents a ceramic technique common in Chinese burials from 618—907 CE. A small jar replicated from common blue and white porcelain patterns, popular during the Ming and Yang dynasties, is included in another drawer. A miniature teapot and 8-cup set in the Yixing tradition. A technique which originated in the Ming dynasty, help expand the visitor's knowledge of Chinese ceramics through a 1400-year timeline. The Yixing teapot has a broken handle—the severed piece still displayed alongside the teapot which serves as a visceral reminder of the care needed when touching objects. An authentic, 1960s Ghanaian kente, remarkably well-made and preserved, is available for visitors to both touch and wear. An elephant mask is in the final drawer. Stretching almost four-feet long, this intricately beaded mask is not strong enough to be worn, but visitors can run their hands over the careful stitching and observe how the fabric has faded over time.

These objects, while interesting in and of themselves, are specifically related to multiple pieces currently on view at the Harn. The Ganesh metal relief sculpture reflects one of the Harn's most iconic works, a stone sculpture of the dancing Ganesh. Avalokitesvara similarly has a counterpoint in the Asian galleries, made of stone, and taken together these two pieces open many channels of conversation in the diversity

and deeply beautiful religious traditions of Buddhism and Hinduism. A large Tang sancai horse found in a burial site is located in the next gallery, and has lost some of its glossy sheen through the years. The two horses in the hands-on drawers are still new and shiny, and provide both the opportunity to touch materials like others on display and open the imagination to how the authentic horse, and other ceramic pieces, have been subjected to the ravishes of time. The small blue and white porcelain jar depicts the same shape and almost identical peony pattern as a much larger jar held in the Asian wing. Yixing ware, while often on view in the Asian galleries, was not available for viewing during this study. The teapot was left in the hands-on drawers due to its popularity with visitors and its ability to convey an important lesson learned in proper handling and conservation. Kente cloth is routinely available for viewing, though was off-view during this study. However, in the contemporary gallery, the large and provocative sculpture *Old Man's Cloth* by El Anatsui hangs prominently. Willis often helps visitors connect the meaning of the traditional kente (translated as old man's cloth) where every pattern and color has rich meaning with the contemporary metal "cloth" made of discarded alcohol tops. The connection between the traditional cloth and this contemporary take can be very powerful for visitors. On view in the African galleries are several glorious masquerade costumes, including a detailed elephant mask. Visitors can draw connections between the hands-on mask and the full in the gallery.

Research Participants

Participants for this study were drawn from visitors at the Harn Museum of Art in Gainesville, FL. Mertens (1997) recommends a sample size ranging from 30-50 for interview methods, though for this study, only 22 complete interviews were obtained. Similar studies employing *Personal Meaning Mapping* (PMM) typically use sample sizes

that correspond to these recommendations for qualitative interviews (Judson, 2011; Falk et al, 1998), though some studies have used over 200 participants with PMM (Falk & Storksdieck, 2003). The study was designed aiming for a sample size of 40, 20 consenting participants in the control group, and 20 in the variable group, with a retention rate of 80% desirable through all levels of the study. Approval from the University of Florida Institution Review Board (IRB) was sought and approved in May 2017, and consent was gained from all adult participants prior to engaging in the study which was completed in July and August 2017.

The final study included 27 participants, with 22 complete and viable interview survey sets for analysis. These participants were sorted into two groups—those that interacted with the education collection (variable), and those that did not (control). Participants were not asked to participate in one group over the other, and were encouraged to naturally experience the museum as they otherwise would have. The retention rate for the study completed was 81.5%, higher than the original goal, though the total number of interviews was less than expected.

Assumptions

As described in Chapter 1, I am working from the belief that education collections are common among museums, though poorly defined. I also maintain the popular belief that education collections have the potential to positively affect museum learning and experience when tied to the museum's mission and permanent collection in meaningful ways (Classen, 2005; Chatterjee, 2008; Levent and Pascual-Leone, 2014). I also empirically believe in the benefit of tactile interaction for specific audiences, such as children and individuals who are visually or psychologically impaired, and support the claim that what benefits minority members of society enriches the experiences of all

(Axel and Levent, 2002; Paris and Hapgood, 2002). I trust that interactions with physical objects, especially for specific groups such as children and those with visual impairments, take great strides in making museums more diverse and inclusive public spaces, which I see as a benefit to local communities and our larger, shared society.

Limitations

As seen through subject-selection, this study did not meet its desired goal of 40 participants, reaching only 22. Five participants gave an entrance interview, but did not return for the exit interview, and their results were removed from analysis. The lower than expected number of participants has made generalization of the original research questions difficult but has provided other evaluative outputs, which will be discussed in Chapter 4. One limitation on this study found a small ceiling effect, where some participants entered the study with high scores and left with high scores, resulting in very little differences throughout the visit. Additionally, I did not have control over the exhibition schedule, and at the time of research an interactive exhibition *Blank Space* was on view. This will be discussed further in Chapter 4.

Methods

This case study used qualitative methods which examined the extent facilitated interaction with the education hands-on collection impacted the participant's experience in the museum. This was accomplished using Eisner and Peshkin's (1990) "bi-methodological approach" (p.7), including *Personal Meaning Maps (PMM)* as described by Falk, Moussouri, and Douglas (1998), and in-depth interviews. Additionally, *narrative analysis* (Connelly & Clandinin, 1997) was used when observing participants interacting with the education collection.

Personal Meaning Maps

Personal Meaning Maps (PMM) is a mind-mapping technique developed in the Institute for Informal Learning (Luke, Adams and Falk, 1998), which allows researchers to measure “change in understanding along four semi-independent dimensions: extent, breadth, depth, and mastery” (p. 106). This method was developed in response to Falk and Dierking’s original 1992 model of contextual learning in museums, and creates a contextual way to “measure how a specified ‘educational’ experience uniquely affects each individual’s personal conceptual, attitudinal, and emotional understanding” (p. 107). A constructivist evaluation framework is necessary to understand the multi-modal ways people learn in museums.

The process is simple, allowing participants complete agency in their responses while permitting researchers to question further, creating a dialogue. Participants are given a sheet of paper with an image, word, or phrase in the center, and were asked to respond to the prompt using words, phrases, thoughts, ideas, or images. For this study, the prompt was an image of the Harn, and visitors were instructed to write, draw, or otherwise respond to this image with whatever comes to mind when thinking about the Harn, using a black ink pen. The blank PMM can be found in Appendix A. PMMs were conducted twice, once before visiting the museum, and again afterwards. After approximately two minutes, the researcher reviewed the participants remarks with the participant’s input prompting informal dialogical conversation. To keep original remarks and their explanations clearly differentiated, the participant used black ink pen, and the researcher reviewed and made notes using a blue ink pen.

After the initial mapping, the participant experienced the Harn. Once finished with their visit, the participant returned to the same sheet of paper as before to respond

again to the prompt. Participants were encouraged to create new responses, or to add and elaborate on prior responses. Once again ink color denotes which iteration of the study responses were given. For the purposes of this study, green or purple ink (based on availability for the day and due to an untimely explosion of a green pen immediately before an interview) were used by the participant to revisit the PMM. I used a red ink pen to differentiate my prompted responses which were uncovered during the exit dialogue.

Ideally, this method would employ a third iteration of the PMM conducted by telephone several weeks or months after the learning experience to understand how knowledge was encoded and stored long term. Unfortunately, the third iteration was not feasible within the scope of this study, but I mention it as it would lend valuable information for researchers interested in studying how learning is encoded in long-term memory and what kinds of learning was deemed critical enough to retain.

Personal Meaning Map Analysis Methodology

PMM is best used to measure the various dimensions of contextual learning: *extent, breadth, depth, and mastery*. When studying education collections within the context of a larger institution, precision is required to define the scope and adapt the perspective of each of these dimensions. PMM is a unique method which takes open-ended qualitative data and overlays a quantitative framework used for comparisons. This framework uses a scoring mechanism which will be discussed below.

Dimension one, *extent*, measured the variety and amount of pertinent vocabulary words used by the participant both before and after the educative experience, and measured the difference. As the researcher, I reused words the participants mentioned or wrote down to avoid tampering with accidental word repetition during both entrance

and exit interviews. Extent was coded from entrance and exit interviews examining the words or phrases used by participants as located on the map. The difference between extent scores on the exit and entrance interviews ($r = X_{\text{exit}} - X_{\text{entrance}}$) shows the gain in vocabulary throughout the visit. This difference was used to calculate the average growth among participant groups.

Dimension two looks at the *breadth of understanding* held by the visitor. I coded and grouped responses around conceptual categories, and counted the difference in verbalization of these categories from before and after visiting the museum. The black and blue ink responses from the entrance interview were counted first, and the green/purple and red ink were counted separately to see the amount of categories verbalized in the exit interview. This study used five categories designed to encompass the holistic visitor experience: knowledge of art and museums generally, knowledge of the Harn's collections, appreciation for and entertainment from art, education in the museum, and the social component when visiting the museum.

Dimension three examined the *depth of understanding*, measured through the level of detail in each conceptual category. The same conceptual categories from dimension two apply to dimension three, but instead of merely counting the number of categories, this dimension examined the level of detail and finesse that is explained for each category. For this study, vocabulary, phrases, and time were used to describe depth of understanding.

Depth of understanding was measured using a points system which took into consideration multiple variables. Points were determined as follows: 1 point per hour of visit, 1 point for entering the BSC, 1 point per category mentioned (breadth), 1 point per

5 vocabulary words and phrases (extent), 1 point for visiting 1-3 galleries, 2 points for visiting 4-6 galleries, and 3 points for visiting 7 or more galleries. While none of these factors directly relates to the depth of understanding expressed by participants during the interview, it does represent the depth of general museum understanding through a variety of factors which indicate how visitors perceived and enjoyed their museum visit. Coding the length of time into points assumed that visitors who are enjoying their experience are spending more time in the museum, and are visiting more galleries. I will provide some examples using participant responses to demonstrate the gains made in depth of understanding in Chapters 4 and 5. My own observations on depth of understanding expressed in the interview correlated with the numeric representation of such depth—examples of such will be provided in Chapter 4.

Dimension four, that of *mastery*, is the “overall facility with which visitors described their understanding” (Falk, Mousourri and Douglas, p. 108). Mastery was the most difficult dimension to evaluate, but was the best indicator of visitor change of museum perception and enjoyment. Personal Meaning Maps are most often used to measure informal learning gained from a specific educational experience within the museum. For example, if a museum would like to know the amount people are learning from an exhibition on prehistoric marine biology, a PMM can be used to determine both the growth in learning and understanding, but also to identify who is an expert before viewing the exhibition. If a marine biologist would enter the exhibition with a more detailed level of understanding than a casual visitor, those outliers can be removed from analysis of non-expert learning growth.

This study used PMMs to examine the holistic museum experience, and the impact an education collection may have on overall learning and understanding. It is important to note that mastery in the confines of this study represents museum literacy, or the level of comfort people have within the museum, and general perception of the museum. This was determined based on six categories, with a point assigned to each category as seen on the entire final map. These categories are: change in depth of understanding with 7 or more points, mention of all 5 breadth categories, making connections between the museum visit and prior experiences, expression of knowledge gain during visit, change in overall extent, breadth and depth scores, and significant time (more than 1 hour) invested in the museum visit.

All four dimensions were coded by me, the researcher, and used mean-analysis to determine what changes in growth occurred during the museum visit. As will be discussed in Chapter 5, these changes were compared along several participant groupings to understand how educational interactions impacted the visitor experience.

Interviews

Personal Meaning Maps are a useful tool to allow for fluidity in participant response (verbal, written, and visual), and for adapting the qualitative interview in a focused and informal scope. My study included both an entrance and exit interview, found in Appendix A, completed alongside the PMM subscribing to qualitative research best practices (Merriam, 2009; Mertens, 1998; Taft, 1997, Eisner & Peshkin, 1990). The entrance interview, built with Qualtrics and administered using an iPad allowed for me to ask the participant nonintrusive questions and mark the answers myself.

The exit interview also consisted of some numeric data such as the number of galleries visited and whether the participant visited the BSC. Four additional in-depth

questions were asked after the PMM was completed to collect data that the participant may or may not have mentioned during the PMM process. This was designed to create a level of separation between the PMM technique and casual responses through conversations about the museum. These responses were used alongside data collected from the PMM to code and analyze data, and will be discussed in Chapters 5 and 6.

Demographics

Demographic information was voluntarily provided by participants during the entrance interview (see Appendix A). The demographic questions were administered following the interview through Qualtrics, and displayed on an iPad. After completing the interview and PMM, I asked participants to offer their information and handed them the iPad to distance myself from their answers. Demographic questions focused on the participant's age, identified ethnicity(s), reasons for visiting, and the group dynamic they visited with. Findings will be presented in Chapter 4, and further discussed in Chapter 5.

Narrative Response

Paige Willis, the BSC educator and a research assistant for this study, carefully facilitated each interaction with the education collection. The narrative response was a short-answer qualitative approach used by the Willis to record her perception of the facilitated interaction with the collection. Several researchers (Connelly & Clandinin, 1997; Merriam, 2009; Mertens, 1998) discuss the benefits of narrative response for recording and analyzing qualitative observations, and is researcher-focused. The narrative response was completed within an hour of the interaction, and included Willis' reflections and thoughts on how the interaction materialized and was received. Her responses, which were emailed to me, were based on her previous experience

facilitating engagement as a regular duty of her post, BSC educator, which she has held for over a year.

For my study, a variable group of half the participants was desired to study the differences between participants who engage with the education collection and those who bypass the experience to view the permanent collection exclusively. In order to avoid pressuring participants into interacting with the education collection, I refrained from suggesting the education collection as necessary for participation, though participants were made aware of the goals of my research and the reasons for participation. Therefore, while I did encourage family groups to enter and explore the BSC, I did not mention the education collection explicitly. Throughout the study, Willis approached participants in the BSC and asked if they would like to explore the drawers containing the collection. The narrative response questions and responses can be examined in Appendix B. The narrative response was coded according to the four dimensions used for PMM (see Appendix C) for analyzing.

CHAPTER 4 FINDINGS

During analysis participants were grouped into variable and control groups based on interactions with the education collection, and *Blank Space* and non-*Blank Space* groups based on engagement with the participatory exhibition, to study the effect interactive experiences had on the overall visitor experience. Responses from interviews were coded and added into the data sets to be comparatively analyzed. These responses represent common threads and deeper levels of discussion with participants not written down on the Personal Meaning Map. This chapter will present my findings and offer tables for easy comparison. I will discuss these findings more fully in Chapter 5, and suggest certain characteristics of interactive education collections, and exhibitions thereof, that promote meaningful understanding in art museums. Tables summarizing data sets may be referenced in Appendix D.

Results

As mentioned earlier, the Personal Meaning Map and a supplemental interview process were coded and analyzed based on four dimensions: extent of understanding, breadth of understanding, depth of understanding, and mastery of material.

Extent

Overall, there was a difference of extent, or increased vocabulary (see Appendix C for a list of common vocabulary words) between the control group ($r=5.2$) and the variable group ($r=8.6$). On average, the control group gained 5.2 more words or phrases during their time visiting the galleries, where the variable group gained an average of 8.6 more words of phrases during their visit (See Table D-1 in Appendix D). This difference may be attributable in part to participation in the hands-on education

collection experience which was facilitated by a skilled staff member. Visitors might have picked up language used by Willis during facilitation.

Participants were categorized into groups that mentioned the interactive exhibition *Blank Space* during their interview, and groups that made no mention of the exhibition. When extent growth averages were calculated for these groups, I found that the control group who did not mention *Blank Space* had an average extent gain of $r=4.75$, while the variable group mentioning their positive engagement with the exhibition had extent growth factoring at $r=6.23$ (see Table D-2 in Appendix D)

Vocabulary gain alone cannot accurately represent learning or enjoyment in the museum, but it is important to mention that participants who enjoyed interactive elements (either the education collection or *Blank Space*) during their visit were able to express more pertinent vocabulary learned during the visit. These visitors, in other words, demonstrated increased museum literacy and were more comfortable overall expressing their experiences. All but one participant had growth in the amount of vocabulary used after the visit when compared to the entrance interview.

Breadth

When coding interviews for breadth of understanding, I created five categories which represent the broad nature of museum experiences and understanding, which can be found along with common extent keywords in Appendix C. It is worth a short discussion of those categories and how participant responses acknowledged understanding of these categories. These categories are: *knowledge of art museums generally, knowledge of collections, art appreciation and entertainment, education, and social connectivity*. *Knowledge of art museums* would include statements such as these by participants: “the Harn is a museum that has art,” and “there are paintings here.”

Knowledge of collections was expressed by more specific understanding of the Harn's collecting areas and inner-workings of museums. Examples of this category included participant responses such as "I saw Tiffany glass in the modern area," and "this museum chronicles its art in certain ways." *Art appreciation and entertainment* typically contained value judgements, and expressions regarding the levels of enjoyment (or lack of enjoyment) experienced at the museum. Examples included "love the green natural spaces at different locations so you have to find them," where a participant expressed both appreciation for the gardens and the enjoyment she had with her family on a "treasure hunt" to visit them all. The *education* category included explicitly educative phrases such as "I learned about different countries and cultures," and simply "learning" in response to the stimulus for the PMM. Lastly, *social connectivity* included comments made about learning or enjoying art together with the participant's visiting group, drawing connections to past experiences or people, or learning specifically about the ways humanity is connected. These statements included "lots of conversation with my friend about unity," and "keeping children of all ages busy."

All participants either remained stable or expanded their expression of these categories during their conversations about the art museum. As with extent, only one participant went down in the number of categories they referenced. However, the categories mentioned were often not the same. Many participants mentioned the building and atmosphere of the museum during the entrance interview, but rarely was this and other generalist statements expressed again during the exit interview.

The control group, on average mentioned 1.65 more categories during exit interview than they did in entrance interviews, while the variable group mentioned 2.00

more categories (see Table D-1, Appendix D). This difference is not dramatically different, which is not surprising given the inherent limitations of expression. When examining all participants, the average growth was 1.73 categories. Knowledge of museum functions, the five categories taken as a whole, increased during the course of the visit for all participants, though the group which interacted with the education collection had a slightly higher growth in this area.

The *Blank Space* groups expressed more variation in breadth of understanding. The group which did not visit or mention *Blank Space* grew an average of 1.34 more categories at the end of their visit, whereas the group which mentioned *Blank Space* grew 2.00 categories (see Table D-2, Appendix D). This difference is more pronounced than participants grouped by education collection interactions, and may be attributed to the larger number of participants who engaged with *Blank Space* (n=13), or half the study.

However, when examining the changes isolated in category 4, education, the variable group recalled or mentioned educative experiences more frequently in exit interviews ($r = 1.80$) than the control group ($r = 1.06$). Similar growth was also expressed by the *Blank Space* categories. Participants who did not mention *Blank Space* discussed an average of 1.13 more educational phrases in the exit interview than in the entrance interview, while those who did interact with educational opportunities grew 1.36 (see Table D-3, Appendix D). This suggests that the facilitated interaction with objects lead to better broad understanding of the educative function of museums than an interactive and self-directed exhibition.

Depth

There was considerable difference in the change depth of understanding (exit interview – entrance interview) between the control group ($r= 6.23$) and the variable group ($r= 9.00$) as indicated in Table D-1 (see Appendix D). This remarkable difference was still significant when the points gained from visiting the BSC are removed. What this depth scoring chart suggests is that facilitated interaction with an education collection influenced the depth of understanding and enjoyment of museum visits for museum-goers. While there was some difference in the extent and breadth categories, depth measured both meaning-making and enjoyment which led to greater changes in this category from the beginning of visit to the end (average for whole study is growth of $r= 6.86$).

Similarly, though to a lesser extent, changes in depth of understanding were also significant between the *Blank Space* groups. The group who did not mention *Blank Space* on average gained 5.89 depth points, while the group which did mention *Blank Space* gained 7.38 depth points (see Table D-2, Appendix D). Again, this suggests that facilitated object interactions were more effective in creating an enjoyable museum experience with deeper meaning-making than a self-guided exhibition.

These numbers accurately represent qualitative data found in the PMM, some of which is worth sharing directly. One participant from the variable group who interacted with the education collection initially wrote very few, and very superficial things about the Harn such as “love the A/C on a hot day” (personal communication, 2017). She did not elaborate much on her answers, but it was revealed through conversation in the entrance interview that she and her children visited the Harn while her husband visited the hospital for a kidney stone. The family was camping nearby and decided to find a

museum to visit to spend time in air conditioning while waiting for the father to be released. During the exit interview, however, answers became more art focused and elaborate. The participant went into a long and animated discussion on her dislike for a label in the photography gallery, prompting not only a critical analysis of the photograph in question but also on the way museums portray and hold the power of knowledge. She discussed this with her family, and applied it to other real-life scenarios. This demonstrated great depth of meaning-making, and though I found myself disagreeing with much of what the participant thought, it remains a good example of how one aspect of museum collections (label writing) can be expanded on in great detail, or depth. Her depth analysis chart measured 13 for the exit interview, one of the highest recorded. Deep expression of understanding and meaning-making is correlated with the numeric score for the depth category. Participants who well explained their personal meaning-making and learning in the museum consistently scored higher in the quantitative depth analysis framework.

An example of a PMM that lacked depth can be found in a participant from the control group. This participant responded in single words, and I found it difficult to glean further meaning through conversation. During the entrance interview he mentioned the word “free” three times, and it was the predominating motivator for visiting. He also mentioned “peace” twice and only explained that he likes museums to be peaceful (not that he finds or enjoys peace in museums). When he returned for the exit interview the only thing he wrote was “the open space exhibition is really great. I think it should continue.” When asked for more details, or why he thought it was great and should continue he simply repeated himself. While he did gain understanding of another

category (appreciation and entertainment), he could or would not give a more meaningful answer, and thus scored low on the coding scale.

Mastery

The control group were scored at mastery levels of an average of 1.88 out of 6 when entering the museum, and left with an average mastery level of 3.88 as seen through Table D-1 (see Appendix D). The control group who did not interact with the education collection gained two mastery points over the course of their visit.

The variable group began their visit with a significantly higher score of 3.2 mastery points, and ended their visit with a score of 5.8 points out of 6 (see Table D-2, Appendix D). The mastery gain for participants who engaged with the education collection was higher than the difference expressed by the control group.

When examining the group which did not visit *Blank Space*, the mastery points during the entrance interview averaged 2.1, and averaged 3.78 in the exit interview. For the group which did experience *Blank Space* the entrance interview reflected an average of 2.2 mastery points, and an average of 4.69 mastery points upon exiting (see Table D-2 in Appendix D). Though there was less difference between these two groups than between the control and variable groups, a significant difference did potentially occur between individuals who engaged with interactive opportunities compared with those who did not.

While the mastery dimension for this study cannot reflect the “expert” museum visitor, it did provide some insight in how people viewed their experience holistically. Individuals with the highest mastery levels recorded significant changes in depth of understanding after their museum visit, and were able to discuss all five aspects of museum understanding: knowledge of art museums, the Harn’s collections,

appreciation of the visit, educative experiences during the visit, and connectivity to real life. These individuals expressed great connection-making abilities, understood the value of learning in museums, and on average spent more time in the museum. In short, visitors with a higher mastery score enjoyed their experience in the museum more than those with a low score.

An example of the language used by a participant who scored a 6 out of 6 on the mastery scale included phrases such as “museum art is personal to everyone,” “I learned a lot about [the variety of] African culture,” and “it’s great to see beauty in non-beautiful objects” (personal communication, 2017). This participant also extended connections between this museum visit and visits to other museums as a child, how the museum and the university are connected, and expressed interest in returning soon.

By contrast, a participant who scored a 1 out of 6 mastery points began the entrance interview with concepts such as “thought” and “art” (personal communication, 2017). When asked to elaborate their response was “art makes you think” (personal communication, 2017). During the exit interview, the participant stated they were surprised by the size and quality of the museum, remarked that the museum is “fun” and they were “impressed by Monet”³ (personal communication, 2017). When asked to elaborate on those themes he responded with “I wrote fun because art is fun,” and “well I was impressed the museum had a Monet, and with his skill I guess, too” (personal communication, 2017). These responses showed a shallow level of meaning-making, which is reflected in the overall lower scores.

¹ Champs d’Avoine () by Claude Monet hands in the Modern Gallery. It is a gift of Michael. A. Smith.

Demographics

Demographics such as age, ethnicity, and group dynamic were collected to analyze differences in data and to determine which groups may be most influenced by interaction with an education collection. Image 4-1 demonstrates the range of age groups, and Table D-4 summarizes these findings (see Appendix D).

With such a small sample size, evaluating museum experience by ethnicity was not worth considering. Figure D-2 (Appendix D) describes the spread of ethnicity in the study. As seen in the chart, 73% of participants were white, 14% identified as multi-ethnic, 9% (n=2) preferred not to answer, and 4% (n=1) identified as African-American. With such a biased spread, data pulled from this grouping was inconclusive and will not be considered.

I also considered organizing participants based on group dynamic, as shown in Figure D-3 (see Appendix D). Similar to the issues expressed when discussing ethnicity, this range of grouping was too narrow to analyze for meaningful data. There are a few reasons for this. College students, though they expressed to me their role with the University of Florida or with Santa Fe State College, routinely selected visiting “with adult friends” or “alone” despite being prompted to respond with as many answers that they identified with. This may be due to interviewing over the summer while students are out of school, or may be attributable to basic human feelings to respond according to social, rather than academic, identifications. It is interesting to note that only one participant selected “on a romantic date,” though her date did not. This interaction during the interview was delightful, as the pair committed ten minutes to being interviewed by me on their first date to the Harn. Additionally, more than the three participants who stated they visited with children did so, though did not select that as a

response. As distribution is too unbalanced, this dynamic will not be interpreted and is discarded.

The last demographic that was researched questioned which of Falk and Dierking's motivations for visiting might pre-dispose a visitor to interact with an education collection. Data was looked at holistically to determine the spread of motivations from all participants, and then analyzed by control, variable, no *Blank Space*, and *Blank Space* groups. Figure D-4 (see Appendix D) illustrates the spread of motivations for participant visitation with 36% of participants visiting to relax and learn something new, 18% came as the result of another group member's suggestion, 18% visited to learn something new, 14% visited primarily to spend time with family or friends, 5% visited because the museum is fun, and 9% chose not to respond. All motivating categories were used for this study.

The reasons for visiting as seen on the interview question (see Appendix A) and Figure D-4 (see Appendix D) correspond to Falk and Dierking's (2012) theory of visitor motivations which can be broadly summed up as: to relax/recharge, to learn, as a social outing, someone else's idea, as a source of entertainment. This is reflected in Figure D-5 (see Appendix D). When examined in this way, visitors were relatively evenly distributed; most of the participants visited the Harn because they viewed art museums as a place to relax. When participants are analyzed according to motivations, a few predictable trends emerge, which will be discussed more fully in Chapter 5.

Participants in the relax/recharge group scored fairly low in the coding system. An average of 3.25 points were gained in extent during the visit, 1.12 categories gained (breadth), depth increased an average of 5.13 points, and mastery levels upon exit were

an average of 3.00. Participants who came to learn scored much higher with an average of 7.50 points gained in extent, 2.55 breadth categories gained during the visit, depth increased by 8.50, and the average mastery level at the exit interview was 5.00.

Participants who came as part of a social outing scored high as well, with 8.00 points gained in extent, 2 breadth categories gained, 8.30 average points gained in depth, and mastery levels of 5.33 upon exit. Participants who came as a result of someone else's suggestion, in part a social motivator, gained 6.75 extent points, 1.75 breadth categories, 7.75 depth points and a mastery level of 5.50 upon exit. Lastly, participants who visited the Harn for entertainment purposes gained an average of 3.00 extent point during the visit, 3 breadth categories, 8.00 depth points and did not experience change in mastery, which remained a 1.00. These findings are summarized in Table D-5 and can be referenced in Appendix D.

Narrative Response Findings

Paige Willis, the staff member who facilitated all interactions with the education collection kept a reflective journal on her interactions. Drawn from information provided in this journal, each interaction was coded and scored with the same four dimensions used in PMM analysis: *extent*, *breadth*, *depth*, and *mastery*. A fifth category of *engagement* is added to the analysis to represent the overall reception and behavior during the interaction.

The five participants who interacted with the education collection demonstrated a range of results based on these interactions (see Table D-6). As demonstrated through variable group findings detailed above, these participants were on average, able to provide higher levels of vocabulary, more categories of knowledge, large growth in depth of knowledge, and attained high mastery levels. Detailed discussion of

participant's interactions with the education collection will be further examined in Chapter 5.

CHAPTER 5 DISCUSSION

The findings mentioned in Chapter 4 reflect the original research questions: how might interaction with education collection objects affect the overall visitor experience, and which demographics have the most impact on those experiences. As seen through the data collected, visitors who engaged with the education collection, as well as those who engaged with a highly interactive exhibition described an overall better and more meaningful museum experience than visitors who did not. These findings will be discussed below.

Interview analysis

When utilized holistically, PMM provides the ability to code qualitative interviews and examine change throughout a museum visit. Overall, visitors who engaged with the education collection displayed significantly more growth in understanding and learning than participants who did not engage with the collection. Similarly, participants who elected to engage with the interactive exhibition *Blank Space* demonstrated higher levels of understanding and meaning-making than participants who did not. This study suggests that visitors who engage with exhibitions and objects through hands-on experiences have an overall better museum experience than visitors who do not. However, when comparing data from the variable group, those who engaged hands-on with the education collection, and the *Blank Space* group, participants who interacted in some way with the exhibition, differences emerged. The education collection group scored consistently higher than the *Blank Space* group, suggesting that hands-on engagement with object-handling in a facilitated interaction leads to higher levels of meaning-making and satisfaction than participating in a free-form exhibition.

The exhibition scores were higher than the average, and therefore interactive exhibitions can be seen to be memorable, enjoyable, and educational for visitors. Engaging exhibitions which invite visitors in as participants is demonstrably effective. I therefore suggest that more museums use interactive components in exhibitions to boost museum literacy, meaning-making, and construction of knowledge. Pairing free-flowing exhibitions with object-handling would potentially yield extremely high scores in meaning-making and enjoyment, and is an area of interest for future study.

Interacting with education collections was productive, engaging, entertaining and educational for visitors. Including this collection more often in intentional planning for exhibition would increase its use and the effect it has on enriching the visitor experience. I suggest incorporating these objects into more programming for exhibitions, making them more accessible for visitors. I also recommend that the Harn creates more welcoming signing for the drawers to entice more visitors to engage. Sign-posting online, on the museum map, and in the galleries, would increase traffic to this collection and thus increase meaning-making among visitors.

Demographics Interpretation

When examining participants based on age, a few interesting things stand out. First, most of the participants were millennials, which is consistent with the Harn's visitor base. The visitor base is typically split between predominantly college students and retirees, with a growing number of family groups, especially for events. That spread was not reflected in participants. As mentioned earlier, this may be due to my own identification as a young woman, though the monotony of age in participants is still surprising. Many of the older visitors I approached for participation declined because they were too busy for interviews, according to my field notes. The interviews I did

complete from the older demographics eventually were not considered in analysis because they all revolved around making complaints about the Harn and offering suggestions on how to run the museum. Many of these interviews were only completed in half and were therefore ineligible for analysis.

There is a general trend that the older the age group, the greater the growth within the museum. The youngest group, 18- to 24-year-olds experienced the greatest growth in mastery, or overall museum experience. It is interesting that the small sample of 45- to 65- year-olds entered the building with greater mastery than the average exit score of the younger age groups, and both participants over the age of 45 attained a perfect score in the mastery category at the conclusion of their visit. This may be due to increased familiarity in art museums as visitors age, or increased perceptions that museums are places to learn. Both participants in the oldest group reported loving art museums and art-making, were both first-time visitors to the Harn, and visited alone.

Grouping participants based on identified ethnicity was too inconclusive and biased to analyze. The overwhelming majority of participants were white, and the remainder were “multiethnic” and therefore difficult to group. This is generally consistent with the Harn’s visitor base, which is predominately white and middle-class. When replicating this study in the future, it may be beneficial for the researcher to purposefully seek visitors who fit a wider range of ethnicities, through programming or special events which bring more of the community to the museum than an average weekend.

Similarly, grouping participants based on their group make-up was inconclusive. This was due mostly to participants self-selecting answers during the demographics gathering portion of the interview. Though the options for group members was broad

and gave the ability to select multiple options (see Appendix A), visitors simply selected the group they identified with most. This can be rectified in future studies by asking participants how the group is made, and inputting answers manually.

The last demographic recorded was visitor motivations. This demographic was studied to determine what, if any, motivators play a role in affecting the likelihood for interaction with an education collection, and which affect the visitor experience most directly. Findings for this group have been discussed in Chapter 4, and can be found in Figure D-4 and Table D-5 in Appendix D. These findings suggest that motivations for visiting the museum are a good indicator of how and what visitors will learn, how they choose to experience the museum, and how they speak about those experiences. Visitors who came to learn in the museum did in fact learn much, and were able to express that meaning-making with great depth. The second research question of my study can be tentatively answered that visitors who come for a mixture of learning and social engagement are more likely to interact with an education collection, and are overall more likely to demonstrate higher levels of meaning-making and enjoyment whether or not they interact with the education collection.

As can be expected, and used as validating evidence for my coding, visitors who came to learn had the highest collective scores. These visitors displayed comfort with the art museum, and gained both depth of meaning-making and overall pleasure with their visit. The lowest scoring group, those who came to relax, predictably scored the lowest. This group of participants came primarily to look, but not to learn, as reflected on the low score for increased meaning-making (depth), and therefore low score for overall enjoyment of the museum visit (mastery) which supposes that learning is a key

component to a successful museum visit. Lastly, the group that came as part of a social outing, and the group which identified as being a “tag-along” where other members of their party suggested the museum, both scored well. These participants visited the museum as part of a group setting, and consistently referenced what was discussed among their group during their exit interview, demonstrating a higher-than-usual ability to discuss art among group members and relate those discussions to a researcher. Discussion among family members and peers was highly valued by these participants, and demonstrated their high scores in meaning-making and enjoyment of visit.

Narrative Response Interpretation

With the exception of participant 4, all participants demonstrated at least moderate engagement with the collection. This included commenting and asking questions about the objects, viewing most of the collection, expressing curiosity in some way, and made some connections to other objects in the galleries.

Participants 1 and 2 were college students who engaged with the collection together with Willis. They expressed curiosity in discovering the objects, though not with the objects themselves. For this group and, according to personal discussions with Willis, many visitors, curiosity is not manifested in interest about the objects, but rather the intrigue of opening a drawer and discovering what is inside. The source of curiosity is found in the anticipation of discovery, rather than in the discovery itself. This group interacted with the collection before entering the galleries, and the participants are frequent visitors. Participant 2 identified the elephant mask with an elephant mask he had recently seen on a prior visit and currently on display in *Elusive Spirits: African Masquerades*. Willis agreed that the two objects are similar, and invited the participant

to touch the education collection object in ways that are inaccessible in the African Art gallery.

Participant 5 also scored mid-range for overall engagement, and comprised of a family group before visiting the galleries. The son was the primary participant interacting, and Willis was immensely surprised by the depth and intensity of his interest. This participant actively engaged with all objects, but was completely uninterested in their use, function, or concept. He was only concerned with the tactile parameters of the object and how he would envision using the object as a weapon. The mother (and study participant) actively encouraged her son's imagination in transforming each object into a series of increasingly grotesque weapons and torture devices. Willis mentions that all "questions revolved around how the object could inflict pain as a weapon," despite her constant re-direction to other areas of interest. As a result, though completely engaged, the participant's extent and breadth of understanding were low scores. However, the depth of perception- intricate connections and analogies made about weaponry- scored extremely high, leading to mid-level engagement of the collection.

Participant 3 scored high in all categories, and was a meaningful one-on-one interaction between a child from a large family group and Willis. This participant made personal connections to most of the objects. While examining the blue and white porcelain jar, he exclaimed "Oh, my Mom would love this! She collects pots from Mexico" demonstrating not only a keen understanding of similar pots from other cultures, but also a personal interest in the object based on his experiences with his mother's collecting habits. He made similar connections between the bronze Ganesh

and his interest in Egyptian mythology. Willis used his interest to explain some of the myths surrounding Ganesh, which led to a robust conversation in the similarities of mythology in vastly different cultures. Immediately after engaging with the collection, this participant read a book on Egyptian mythology in the BSC. Lastly, the participant was interested in the kente cloth, and Willis explained the connections between kente and El Anatsui's contemporary sculpture *Old Man's Cloth*. The participant and Willis together researched this connection further on the internet and discussed some of the ways traditional art-making practices influence artists today. Such keen and sustained interest is common for interactions with the collection, though is not the norm. Medium levels of engagement are the most prevalent form of interaction with the collection, as shown through the limited data. Even mediocre engagement with the collection has the potential to greatly affect the museum experience.

Lastly, it is worth examining Participant 4's low scoring engagement. This participant only engaged with the tactile paintings located in the BSC, which as mentioned in Chapter 4 are used during *Access Art*, a yearly event for individuals with visual impairments. Though the participant was directed to the education collection housed in drawers, he was uninterested in examining them. He gave several reasons for his refusal, namely that he was an artist and already actively engages with objects in his own art-making. He did, however, express joy in discovering the many ways the Harn engages visitors in interactive ways. He stated during the interview process that it was a "nice reminder, especially as a painter, that pre-cell-phone and more hands-on opportunities are available through programs for the public and especially for students." (personal communication, 2017). Though this participant was not actively engaged

himself, he expressed his regard for the collection and would highly recommend it to others.

Other Qualitative Observations

The open-ended and visually-based approach to interviewing led to a number of unexpected, but important observational findings. Some participants even responded using images, copying the imagery in the PMM prompt, which was then explained in conversation throughout the interview process. One such participant, who mistakenly thought he was in the Florida Museum of Natural History next door, drew a dinosaur next to Earth being hit by a comet. During his exit interview, he drew a Buddha statue demonstrating the variety of hand positions the Buddha might express to mean different philosophical concepts. The participant was impressed by this information and learned much about Buddhism during his visit, which contributed to his pre-existing worldview that humanity is connected. Under the Earth he drew from the entrance interview, he added the words “we are all one” to express the deep conversations he had about multiculturalism and unity with his friend while in the museum.

Many of the participants were surprised by free admission to the museum, and expressed that during their entrance PMM. Similarly, the building was described often, ranging from “block architecture” that “needs new plants in front,” to “big, bright, entertaining place.”

Just over half (n= 13) of the participants were first time visitors to the Harn, and most of these expressed some surprise at the size of the museum and the quality of its collections. One such visitor remarked that she “loved the Monet and the Warhol [photographs]! Lots of diversity in the museum.” She went on to reflect that “art is like

music, tastes are wide,” and remarked that the Harn did a good job appealing to wide tastes (personal communication, 2017).

Lessons Learned

I learned quite a few lessons over the course of this study, a few of which will be potentially summarized here as they will assist future research into education collections. The first lesson I learned was that my participant base would be smaller than anticipated, and more time is needed to conduct the study. For future studies, a few changes to the demographic questionnaire are recommended. First, including a question on highest level of education is important to understanding why some visitors entered with high museum literacy and eloquence and some did not. Second a question on average salary would be useful when studying the effect of class position and the likelihood of visiting an art museum and comfort levels therein. Third, many participants complained that the question of visit motivations was constricting, and they were visiting for a combination of reasons. This is supported by Falk and Dierking’s (2012) research, and can be better adapted to include all reasons for visiting, followed by a question asking what is the primary reason for this particular visit.

During the course of this study, I moved locations several times. I quickly learned that asking for participation immediately after visitors enter the building, are stopped by visitor services for a map, are stopped by security to surrender backpacks, water bottles, and umbrellas, and then are stopped for participation in a research study is too much stimulation when entering the museum. I moved location outside of the BSC and garnered much better traffic. I also experimented with sitting near the contemporary gallery (see Appendix E for map of the Harn), and though the flow of traffic was greater, it was too close to the entrance and hub-bub of interactions. In the end I settled on

placing myself outside of the BSC, with signage asking for voluntary participation (see Appendix E). I learned that allowing for 5-6 hours of trial runs are necessary to fine tune the perfect location for interviewing, and to test all questions. For future studies, I recommend a testing week evaluating types of questions, interview framing, and locations before deciding on consistency.

Recommendations for and Characteristics of Effective Education Collections

While the study cannot be generalized to make grand claims about the effect of education collections, I can offer concrete characteristics, or best practices, that demonstrate a successful education collection, and make suggestions for how to implement these characteristics.

Facilitation is the key for successful education collection: Data from the study demonstrates the difference in meaning-making and understanding between the control group (facilitated education collection) and the Blank Space group (free-flowing interactive exhibition.) Skilled staff and volunteers are of the utmost importance for education collections, making each interaction personal and assisting with not only meaning-making from education collection objects, but contributing to museum literacy.

Education collections should enhance the permanent collection: Maintaining and offering objects that are unrelated to the rest of the museum will lead to confusion over the museum's goals and disconnect with the museum visit. Objects should enhance other objects, and contribute to meaning-making with the permanent collection by providing an anchor of understanding. Simon (2010), an advocate for increasing participation in museums, routinely suggests interaction can increase the relevancy of the museum. Likewise, increasing participation in the education collection makes the permanent (non-touchable) objects more relevant as well.

Education collections should be grounded in educational theory: Without a well-defined educational theory comprising of a theory of knowledge, theory of learning, and theory of teaching, education collections will become a hodge-podge of objects used with no clear direction. As demonstrated in Chapter 2, educational theories should be clear, well-known to museum staff, and applied to all educational experiences. The Harn anchors its education collection in the constructivist epistemology tradition, employs the contextual model of learning when planning programs and uses for the education collection, and carefully crafts audience-based pedagogy when facilitating the collection to ensure the most personal meaning-making possible.

Education collection objects should be touched: While decay and risk of destruction are serious concerns with education collections, objects should be used in dynamic ways unavailable by the permanent collection. There will be objects in every collection that are unable to be handled, or on view, but the risk is less with education collection objects. The Harn no longer uses gloves when facilitating use of this collection, though providing cheap nitrile gloves like “museum professionals” provides a layer of protection and excitement for visitors. Allowing touch on a regular basis in the museum enhances accessibility of collections, and promotes shared ownership with the community. It also works to teach children about the no-touching rules in the rest of the museum, by seeing first-hand the damage handling can have on an object.

Education collections should be preserved with similar care as the permanent collections: Despite the heavy handling these objects are prone to, proper care should be taken, providing the objects with appropriate storage and facilitating use to ensure the objects are not being mistreated by visitors.

Education collections should be visible: Promoting the education collection means promoting that the community is welcome to handle and share ownership in a collection. This means more people will engage with the collection, and therefore will enhance meaning-making and satisfaction with the museum visit in the galleries. The Harn currently does not have any signage for the collection, and it is only mentioned on the website. Improving visibility will improve the quality of visitor experiences for all audiences, and will grow specific audiences such as families with children, the elderly, and the visually impaired community.

Conclusions

When examining the data holistically, drawn from PMM comparative analysis, narrative response, and critical examination of qualitative interviews, the original claims for the study, while small, are supported. Interaction with the hands-on education collection at the Harn does lead to increased and deeper meaning-making and a more positive and well-rounded museum visit. While this information cannot be generalized to other museums due to its limited sample size, the study can be replicated and adapted for use elsewhere. Evaluation of education collections is critically important for their health and survival, and can lead to increased audience participation, engagement, opportunities, education, and enjoyment. The visitor experience does not assume any of these attributes to be of more importance than the other, and all contribute to meaning-making. This survey can be adapted to suit specific research goals and questions by changing the questions asked during the interview and the criteria for coding participant responses.

This thesis research set out to study the effects interaction with a hands-on education collection may have on the overall visitor experience. Using a mixed-methods

approach and qualitative research best practices, I designed a study that examines connections between education collections and visitor experience while allowing for open-ended and multi-modal responses from participants.

As discussed in Chapters 4 and 5, the data collected supports the claim made by many museum educators (Paris, 2002; Chatterjee and Hannon, 2015; Levant and Pascual-Leone, 2014) that tactile interaction with an object promotes deeper meaning-making in museums. This study should be repeated, both at the Harn and other institutions, to further test the effectiveness of education collections and reveal other insights. Additionally, education collections can be evaluated in the context of other programming activities, such as tours, events for specific communities such as children or the blind, and events for the whole community such as receptions and community nights. Education collections may also be studied in isolation, to determine what types of facilitation are most effective, what types of objects are most effective, and how visitors internalize these interactions through time.

This claim is further supported by the history of collections, which originally allowed tactile access to objects based on the belief that deep learning is enhanced, and indeed dependent upon, object handling. After collections split from the traditional thought and focus on handling and introduced grand halls filled with glass cabinets, education collections were formed from second-best objects to continue the tradition of touch in museums. A renewed interest in touch arose during the rise of museum educators in the elite hierarchy of museum staff and function. Informal learning and object-based learning became the focal point for museum research over much of the past 25 years (Hein, 1998; Falk and Storksdieck, 2003; Candlin, 2004; Classen, 2005;

Adams, 2015). This research continues today, and this thesis injects education collections as explicit tools for touch in museums into those conversations.

There are a number of questions raised by this study, and a few areas for future research. This study can be replicated on a larger scale, and tailored to fit a wide variety of education collections and art museums. Conducting a study on a larger scale ($n > 100$) and at multiple institutions would provide validity and generalizability for the study. Researchers interested in studying how education collections generally influence the visitor experience would learn much from conducting such a study. Additionally, further questions might be raised regarding which types of museums cater to hands-on learning using the above-mentioned characteristics. The field would gain valuable knowledge by replicating this study's design across several types of museums including natural history museums, art museums, history museums, historic houses, children's museums, aquariums, and zoos. I think it would be interesting to apply education collection theories to zoos and aquariums which arguably contain education collections in the form of petting arenas. Studying how first-hand interactions with animals affects the overall perception of the zoo or aquarium visit would be an interesting and useful parallel to this study of art museums. Lastly, several questions remain on what kinds of visitors are more likely to engage with education collections, and participate in interview-based research studies. Further research into the motivating factors of museum visitation and the effect that may play in influence these decisions is necessary for a holistic view of education collections and their potential. These questions and more help practitioners understand education collections, the dynamic with which they are engaged, and the effect they have on visitors. Therefore, it is my suggestion that

museum educators take the time to evaluate such collections, and make changes so these collections are best reflecting institutional goals and servicing the needs of their audiences.

APPENDIX A
INTERVIEW AND PMM DOCUMENTS

Entrance Interview Questions

Identifying markers

Participants Initials

Date

Time

When was the last time you visited the Harn?

My last visit was...

How many times have you interacted with the touchable objects found in the Bishop Study Center (BSC)?

0

1 - 4

5 - 9

10 +

Are you visiting alone or with a group? Please describe the group. (Check all that apply.)

Alone

With adult friends

On a romantic date

With adult family members

With children

- As a college student

Please indicate the age group that best describes you.

- 18 - 24
- 25 - 45
- 45 - 65
- 66 +
- Prefer not to answer

Please indicate the group(s) that you most identify with.

- African
- African-American
- Afro-Caribbean
- Arab
- Asian
- Asian-American
- Caucasian (White, not-Hispanic)
- Hispanic
- Latino/a
- Native American
- Pacific Islander
- Multiethnic

- Prefer not to answer

Which of the following reasons primarily motivated you to visit the Harn today?

- To relax and enjoy the museum's art collection
- To learn something new
- To help others (friends, children) learn something new
- Someone else in your group suggested the museum, and it sounded

like a good idea

- It is a fun place to visit
- To spend time with family or friends
- Other

Exit Interview Questions

Identifying Markers

- Participant's Initials
- Date
- Time

About how many galleries did you visit today?

- 0
- 1-3
- 4-6

7+

How much time did you spend in the Bishop Study Center?

A great deal

A lot

A moderate amount

A little

None at all

What did you do in the Bishop Study Center?

Research library

Children's books

Art-making activity

Puzzles and games

Hands-On collection

Discussion with group members

Discussion with BSC Assistant

Nothing, just looked around

Picked up a family interactive

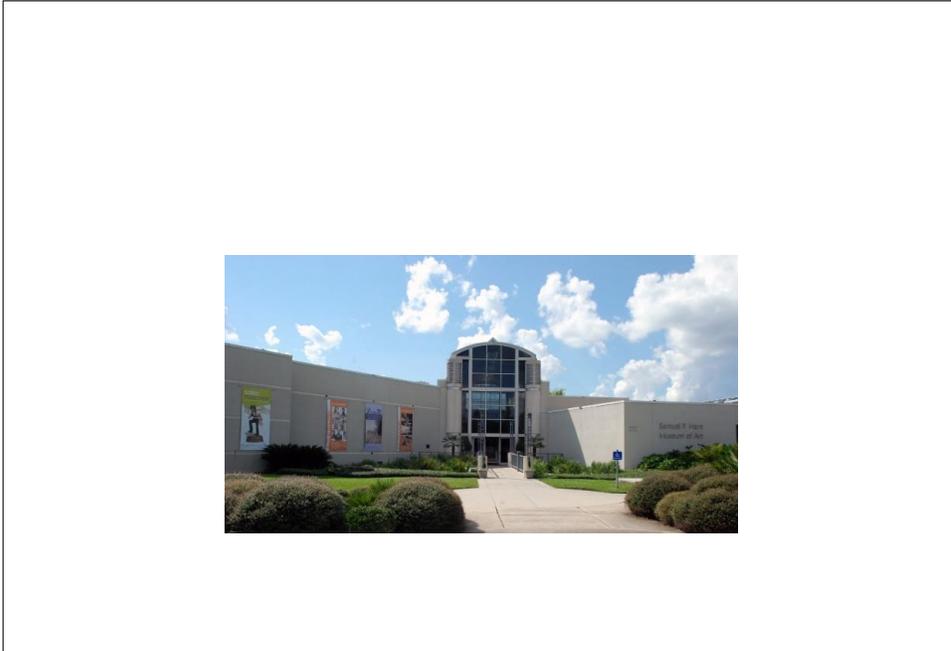
Why did you decide to interact with the touchable objects in the Bishop Study Center?

What did you learn from your visit today?

What was the highlight of your visit today?

What, if anything, stuck out about your visit today? Was the experience positive or negative, and how?

Blank PMM



APPENDIX B
NARRATIVE RESPONSE METHODOLOGY

1. Describe the level of engagement. (high, medium, low)
 - High engagement- visitor was actively participating in the experience, asked many questions about the objects, voluntarily explored multiple objects, made connections to real life from the objects
 - Medium engagement- visitor was actively participating in the experience most of the time, explored more than 1 object, asked some questions about the objects, made conversation centered on the objects
 - Low engagement- visitor appeared bored or uninterested, only engaged with few objects, easily distracted from objects, asked little to no questions, made little to no comments/conversation related to objects
2. Did the participant visit the museum before the interaction or after? If before, how did they talk about their visit? Positively? Negatively? In connection to the objects they are touching?
3. Approximately how long did participants interact with objects?
4. Describe questions and inquiry vocalized in discussion by participants.
5. Describe how curiosity was expressed by participants.
6. Describe the real-life connections (if any) drawn by participants.
7. Describe how parents interacted with their children (if applicable).
8. Describe any other noteworthy interactions.

APPENDIX C CODING CATEGORIES

1. Art
 - a. Museum
 - b. Collection
 - c. Creativity
 - d. Art history
 - e. Mediums
 - i. Ceramic
 - ii. Pottery
 - iii. Painting, etc.
 - f. Images
2. Collections
 - a. African Art
 - b. Asian Art
 - c. Contemporary Art
 - d. Modern Art
 - e. Photography
 - f. Research
 - g. University of Florida
 - h. Specific Objects
 - i. Tangible & intangible benefits
3. Appreciation & awareness
 - a. Entertainment
 - b. Enjoy / Like / Dislike
 - c. Fun
 - d. Diversity
 - e. Awareness
 - f. Cultures
 - g. International
 - h. Society
 - i. Variety of artists
4. Education
 - a. Learn
 - b. Understand
 - c. Teach
 - d. Grow
 - e. Engagement
 - f. Math
 - g. Science
 - h. Art education

5. Social grouping
 - a. Fun
 - b. Friends
 - c. Family
 - d. Gainesville
 - e. Florida
 - f. Conversation
 - g. Talked about...
 - h. Memory
 - i. Reminds me of...

APPENDIX D
TABLES AND FIGURES

Table D-1. PMM Analysis – Education Collection

Iteration	Extent	Breadth	Depth	Mastery
Control	5.18	1.60	6.23	Before- 1.88 After- 3.88
Variable	8.60	2.00	9.00	Before- 3.2 After- 5.80

Table D-1

Table D-2. PMM Analysis – Blank Space

Iteration	Extent	Breadth	Depth	Mastery
Did NOT mention Blank Space	4.75	1.34	5.89	Before- 2.10 After- 3.78
Did mention Blank Space	6.23	2.00	7.38	Before- 2.20 After- 4.69

Table D-2

Table D-3. Breadth Analysis – Education Category

Iteration	Change in Breadth
Control	1.06
Variable	1.80
Did NOT visit Blank Space	1.13
Did visit Blank Space	1.36

Table D-3

Table D-4. Age Analysis

Age Group	Extent	Breadth	Depth	Mastery
18 – 24 n= 14	6.28	1.71	6.57	Before- 1.5 After- 4.43
25 – 45 n= 7	4.57	1.71	7.29	Before- 2.29 After- 4.57
46 – 65 n= 2	9.00	2.50	8.50	Before- 4.50 After- 6.00

Table D-4

Table D-5. Motivators Analysis

Motivation	Extent	Breadth	Depth	Mastery
To relax n=8	3.25	1.12	5.13	Before- 1.88 After- 3.00
To learn n= 4	7.50	2.55	8.50	Before- 3.25 After- 5.00
For social outing n=3	8.00	2.00	8.30	Before- 1.33 After- 5.33
For entertainment n=1	3.00	3.00	8.00	Before- 1.00 After- 1.00
Someone else suggested n=4	6.75	1.75	7.75	Before- 3.75 After- 5.50
No response n=2	9.00	2.00	7.00	Before- 2.00 After- 4.00

Table D-5

Table D-6. Narrative Response Findings

Participant	Extent	Breadth	Depth	Mastery	Engagement
1	3	3	3	1	3
2	3	3	3	1	3
3	5	5	5	5	5
4	1	1	1	1	1
5	3	5	3	1	3

Table D-6

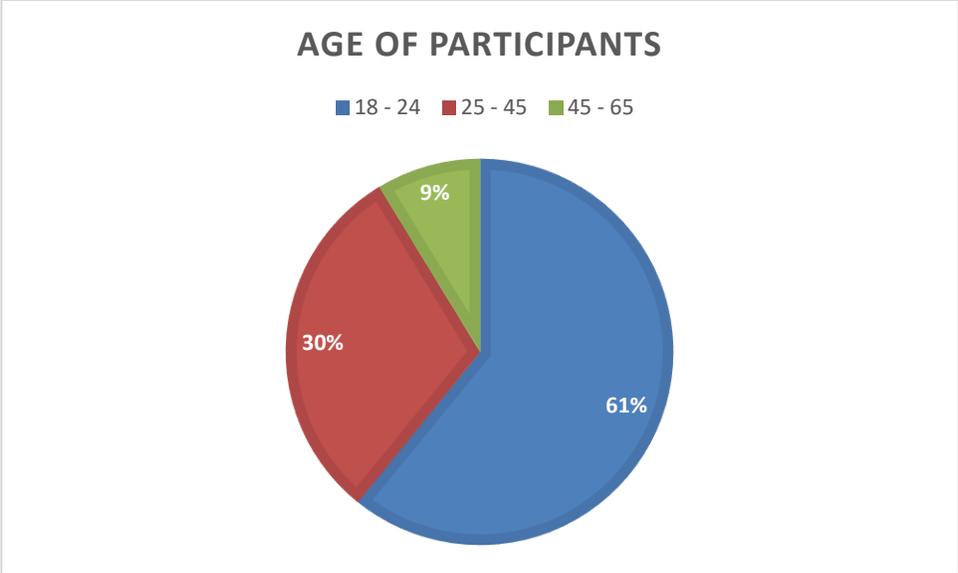


Figure D-1. Age of Participants

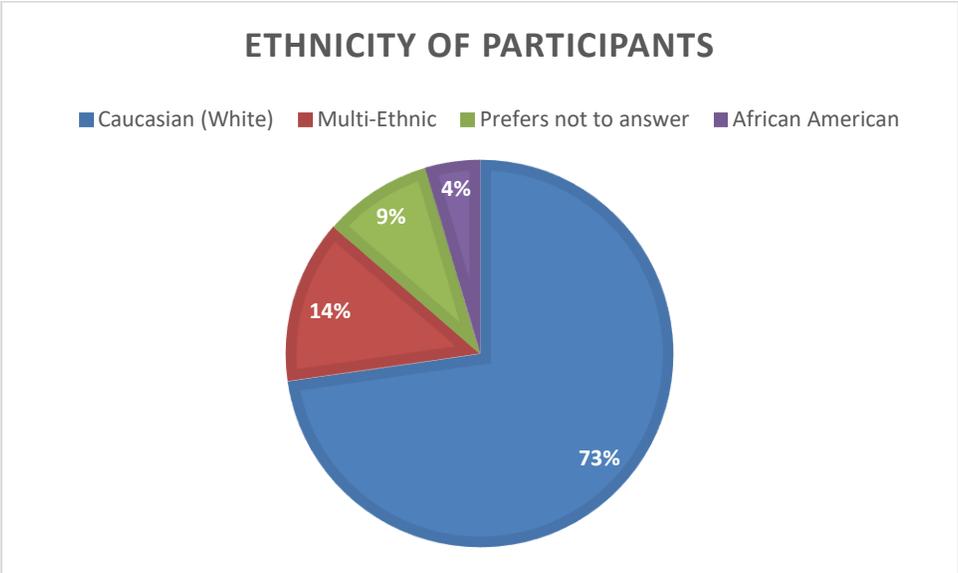


Figure D-2. Ethnicity of Participants

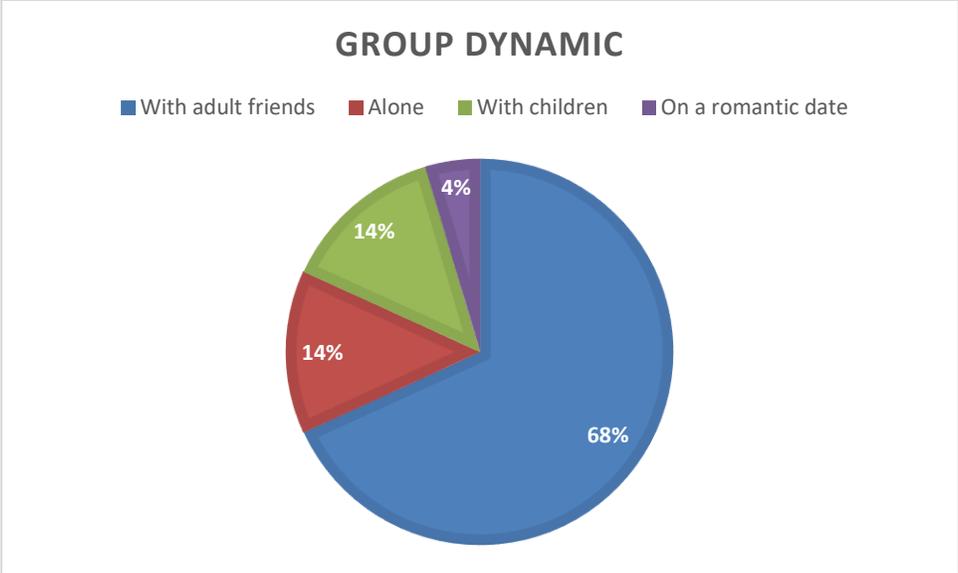


Figure D-3. Group Dynamic



Figure D-4. Reasons for Visiting

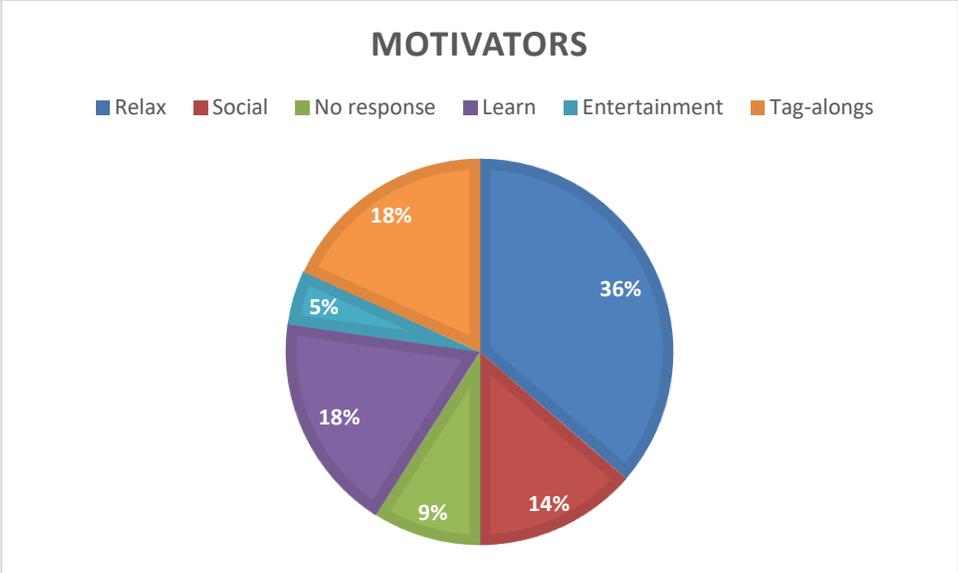


Figure D-5. Motivators

APPENDIX E
HARN MUSEUM OF ART DOCUMENTS

Mission Statement

The University of Florida's Samuel P. Harn Museum of Art collaborates with university and community partners to inspire, educate and enrich people's lives through art. The museum brings the joy of experiencing great works of art to diverse university, community, national and global audiences through relevant and enlightening art collections, exhibitions and learning opportunities.

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BIOGRAPHICAL SKETCH

Katherine Nickel received her Bachelor of the Arts degree from the University of Florida in 2013, majoring in anthropology. She has worked with museums such as the Harn Museum of Art, the Matheson History Museum, and The Churches Conservation Trust. Nickel has taught at Open Arms Child Development Center for 6 years educating children ages one through five. Nickel is interested in how education collections might be reconsidered to become staple collections in art museums, and how facilitated tactile interactions in museums contribute to the internalization of the museum experience.