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How Can American Art Museums Enhance Millennials' Interest in Art: A Case Study of Two
Art Museums

By

Fang Fang

A Thesis
Submitted to the Faculty of Graduate Studies
through the Faculty of Education
in Partial Fulfillment of the Requirements for
the Degree of Master of Education
at the University of Windsor

Windsor, Ontario, Canada

2017

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How Can American Art Museums Enhance Millennials' Interest in Art: A Case Study of Two
Art Museums

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Author's Declaration of Originality

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Abstract

Worldwide, millennials' attendance in art museums has been declining since the turn of 21st century. Millennials' interest in museums and art works can be enhanced by using technological approaches, which would allow visitors to interact with works of art in a more personal, effective, and educational ways. The Cleveland Museum of Art (CMA) and the Detroit Institute of Arts (DIA) have become two models of how American art museums implement technology to enhance millennials' artistic experience and learning in museums. This research uses institutional documents and the CMA and the DIA websites, interviews, and autoethnography as methods of data collection. Research findings demonstrate how the use of the effective interaction of technology with works of art in museums can enhance millennials' art learning and experience.

Keywords: American art museums, millennial museum attendance, art and technology.

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Chapter One: Introduction

Motivation

I chose this topic because of my interest in and my affinity with art works and museums. For many years, I have been visiting museums in different countries. When I first went to Europe, in Paris I visited the Louvre. It was the first world-class museum that I visited outside of China, and its huge collection of art, as well as its royal architecture, made a great impact on me. It immediately provoked in me a great curiosity about the encyclopedic collections of the world's museums. Then, I was lucky to have opportunity to visit European and North American art museums including the Musée d'Orsay and Musée Rodin in Paris, France; the van Gogh Museum in Amsterdam, The Netherlands; the Uffizi Gallery and square with Medici's statue and Michelangelo's statue David in Florence, Italy; the Alte Pinakothek in Munich, Germany, and the Roma National Museum of Art in Rome, Italy; Montreal Museum of Fine Art in Montreal, Vancouver Art Gallery in Vancouver, Art Gallery of Greater Victoria in Victoria, Canada; U. S. art museums including the American National Gallery of Art, the Smithsonian American Art Museum, the Renwick Gallery, and the National Portrait Gallery in Washington DC, the Seattle Art Museum in Seattle, the Art Institute of Chicago in Chicago, the Detroit Institution of Arts in Detroit, the Cleveland Museum of Art in Cleveland, the Metropolitan Museum of Art, the Frick Collection, the Solomon R. Guggenheim Museum and the Museum of Modern Art in New York.

Before visiting these museums and galleries, I would read about the artists, the styles of painting, and the art theories behind them; however, seeing the artworks in person transcended my academic understanding of the works. I would also spend as much time at each venue as possible, jotting down details and my personal reflections, following docents, and talking to museums educators and other visitors. These experiences not only influenced the way I viewed

art and thought about it, but also the way that I thought about my own life. Each time, upon my return home, I would share my experiences in detail with friends and family.

The more art museums I visited, the more I became interested in studying art works, and the happier I became and more I wanted to immerse myself in artistic environments. As well, I have become more open to diverse opinions, even if those opinions are opposite to my own perspectives. In sharing my passion for art with those who I care about, I came to realize that I aspired to a career that would allow me to dedicate myself to the world of art. My love of art gave me courage to confront the risks and challenges of a new life, prompted me to quit my job in Beijing when I was 34, and brought me to the University of Windsor to pursue a Master's degree in Educational Administration. Now, after 18 months of graduate school, I know how wise a decision was to start a new life in Canada. I have always believed the arts have a unique ability to benefit people by offering new perspectives, energy, passion, and ambition.

In order to support my studies, in May 2016, I took a volunteer position as a gallery service assistant at the Detroit Institute of Arts (DIA). Since I wanted to learn how the DIA attracts its young audience, it was an opportunity for me to observe young museum goers, while also exploring the DIA's mission, collections, and organizational system. I also communicated with Mr. Kenneth Morris, the director of the Research Department of the DIA, and he offered useful suggestions for my study. Meanwhile, in the process of searching for relevant information about the intersection of art and technology, I contacted Ms. Elizabeth Bolander, the director of the Research and Evaluation Department of the Cleveland Museum of Art (CMA). After having multiple communications over the phone, she decided to support my study and shared the CMA's pre-existing documents and on-going studies with me. Ms. Bolander invited me for a seminar on November 18 - 19 at CMA. During this visit, I had meetings with Ms. Bolander as

well as with Hannah Ridenour, Research Specialist; Jeremy Gutow, Evaluation Assistant; Bethany Corriveau, Audience Engagement Specialist; and Stephanie Foster, Interpretation Specialist. They all gave me advice for my study and offered me more resources. Ms. Bolander offered me related studies and data and allowed me to use CMA as a case study. I also explored the Gallery One and ArtLens, a high-tech application that allows visitors and off-site users to explore the museum in an innovative way, and I participated in the Museum Yoga, the Gallery Tour, and Curator Lecture.

Background

From my communications with the museum staff, I learned that museum audience behaviour and expectations are changing rapidly. These changes are driven by ever-multiplying and diversifying options for spending leisure time and by technological developments that are fundamentally altering the way people interact with our world. Young museum goers, including me, hope to learn more and have more exciting and joyful experiences when they visit a museum but these hopes are not easy to fulfill. Therefore, art museums need to create new approaches for millennials to tell the stories about art works more effectively.

During my visits to museums, I always paid attention to the other visitors because I am interested in how people enjoy art and what impressions they gain from the art works. When working at the DIA, I not only carefully observed how millennials were wandering through galleries but I also talked to them. Then I realized that most of them did not like to spend too much time reading about the art objects on the adjacent wall panels or on the small labels. Nor did they seem interested in the gallery cards and flyers that the museum information desks offered them because the jargon was difficult for them to understand and did not answer their specific questions. In my observation, most people do not find it easy to grasp what the

terminology used by museum wants to express, and a lot of it remains there for a long time without the information at museums being updated/adjusted to the needs of their visitors.

In terms of docent-led museum tours, I have noticed that the traditional tour does not satisfy many of today's young adults; the tours being largely docent-led and not visitor-centered seemed to have a dampening effect on them. Many docents, who are usually retired and volunteers, would begin the tour by asking, "Who is this artist?" Normally, no visitors would answer and then the docent would start to give a lecture about the art work at which point the crowd would often begin to move on to the next art object. Baby boomers (aged 55-74) appeared to enjoy such traditional museum tours. However, it appeared to me that the lecture style may not be an effective way to encourage younger gallery goers to explore the collections, programs, and exhibits.

In terms of self-tours, audio-guides are helpful tools for millennials to achieve a productive and enjoyable learning experience. However, based on my experience visiting American museums, I perceived that audio-guides have two limitations. One is the limited coverage of the collections. In fact, no audio-guide can comprehensively enough introduce all permanent collections much less temporary exhibits. Another drawback is the limited language choices offered in audio-guides, which most of often use only English language. As I recall, only the Metropolitan Museum and the Museum of Modern Art in New York and the National Gallery of Art in Washington DC offer audio guides in Mandarin, and the guides only cover about 30% - 50% of the collections. Obviously, this is a big barrier for visitors whose first language is not English and who do not have background in art to gain an effective museum experience. As an avid museum aficionado, I always want to learn more about/from art objects, for example the masterpieces of Vincent van Gogh. But my own abilities and knowledge were not enough to help

me make connections between the art objects and the artist's feelings, and to enlighten my mind through observation only. I did need professional mentoring. While I do not claim to represent all of my peers, it is likely that others feel that way too and that "the usual approach" is a barrier for art museums that want to attract a diverse and young audience. Thus, art museums as cultural institutions should realize how to provide more interesting, productive and novel museum tours for millennials.

With the ever-changing development of technology, today's millennials can investigate art works whenever and wherever they want on their laptops or smartphones. Therefore, why would they need to visit museums or join a museum tour? For example, at the University of Windsor I talked to an instructor about my study. She loves visiting art museums so she suggested to her oldest son, who is 18 years old, that they visit the Metropolitan Museum; but he replied that he have already been to it. She was surprised and asked when. Her son said, "on the screen." When I set out to do a study about museum experience from millennials' perspectives, I went straight to Google and NEA website. I found that some American art museums were/are struggling to attract new and younger audiences and are trying different approaches to increase millennials' attendance. In America,

Since 1982, the National Endowment for the Arts (NEA) has periodically issued results from the Survey of Public Participation in the Arts (SPPA), a comprehensive survey that has shown significant declines in attendance at performing arts events and at art museums/galleries over long timeframes, particularly between 2002 and 2012. (NEA, 2016, para. 3)

The National Endowment for the Arts (NEA) is an American independent federal agency that carries out extensive research into museums. A study by the NEA found that museum attendance

dropped 5 percent from 2002 to 2012, and only visits by museum goers 75 and older increased during that period (Cannell, 2015). Another NEA study showed that more millennials visited museums in 2008 than in 2012, and the number of visitors 65 and over increased, which means that the average museum goers are getting older (Pop Culture, 2015). In August 2016, according to the data and studies between 2013 and 2015, NEA released a latest research that,

for the first time offers a complete state-by-state perspective on how Americans participate in the arts. In addition, the data reveal that despite decades of declining arts attendance by U.S. adults in the performing and visual arts, more recent rates are holding steady. (NEA, 2016, para. 1)

Following more accurate trend-tracking, museums researcher found there were some broad differences between adults' state-level rates of arts participation and adult's national average. For instance, "rates are below average in southern state such as Mississippi, West Virginia and Florida", however, "western states tend to have participation rates above average [and] eastern states such as Maryland and Vermont also have above-average rates" (NEA, 2016, para.12).

Offering free admission and hosting innovative and effective workshops, talks, activities and events are the strategies that these museums use to attract more millennials. For instance, the San Antonio Museums of Art offers free or discounted admissions for local college students; the McNay Art Museum in Texas hosts "McNay Second Thursday" that is a monthly event with free admission to museum, live music, food trucks, docent-led tours and beer. MIX at the Cleveland Museum of Art is a monthly 18-and-over event that "features different art projects, demonstrations and performances" (The Cleveland Museum of Art - MIX), and the Museum of Modern Art in New York has a group called the Junior Associates that aims to bring young professionals to the museum (Ethington, 2014).

Other US art museums also decided that they should be maximally interactive to draw millennials' attendances through new technologies. At the L.A. Broad, the newest art museum in Los Angeles, for example, "guests can make reservations on iPads for timed entry to special exhibits, and the museum will text people back when they may enter" (Vankin, 2016, paragraph 10). In 2015 many American museums installed a new form of Bluetooth technology known as beacons (Cannell, 2015). And some art museums, like the Cleveland Museum of Art, encourage visitors to download the museum's app - ArtLens. Museums also utilize the high-tech way to demonstrate exhibits, like the *Charles James: Beyond Fashion* at the Metropolitan Museum. As well, they have developed an interactive gallery to fuel millennials' interest through interactive games, like the Gallery One in the Cleveland Museum of Art. Museums also use social media to post advertisements, photos and videos of exhibits and events, like L.A. Broad Museum. An on-site survey conducted by Morey Group for the L.A. Broad Museum found that "1 in 4 visitors heard about the museum through someone else's social media feed" (Vankin, 2016, para. 13).

Before I started to conduct this study, I explored three U.S. art museums that gave me fresh inspiration about how art museums use art and technology. In the summer of 2014 I visited the exhibition, *Charles James: Beyond Fashion*, at the Metropolitan Museum in New York. This fashion exhibition used lots of high tech, such as robot arms with cameras, X-ray techniques, computer models, and animated video imagery. These allowed visitors to explore as many details as possible in the art object through the interactive installation that was a totally new and unique experience. I observed that the visitors' faces were filled with surprise, curiosity, and enjoyment. In 2015, I visited the Cleveland Museum of Art for the special exhibition, *Monet's Garden*. The Gallery One, located at the entrance of the museum, was filled with many big screens and interactive installations and there were many children, young adults, and families playing there.

To me, it was a perfect interactive blend of art and technology. In 2016, I visited the Art Institute of Chicago and saw *Van Gogh's Bedrooms*. This exhibition, presented only at the Art Institute of Chicago, has brought together for the first time in North America all three versions of *The Bedroom*, “offering a pioneering and in-depth study of their making and meaning to Van Gogh in his relentless quest for home” (The Art Institution of Chicago – Van Gogh’s Bedroom). The exhibit utilized a lot of computer models, animated video imagery, interactive video walls and touch screens to allow visitors to explore and compare the three versions and to allow audiences to gain as much information about Van Gogh’s life and artistic skills as possible. Overall, I found all of these exhibits very engaging, and when I reflected on them, I realized that they were teaching me to understand the art objects and the artists’ mind through new technologies in a very effective way. I believe that these productive learning experiences are one of the most powerful tools to trigger young adults’ interests in art. Art museums are increasingly utilizing new technology as a method for engaging visitors with their collections. Therefore, the purpose of my thesis is to explore how art museums can enhance millennials’ interest in art and can draw more millennials to art museums, especially through utilizing the interaction of art and technology.

Statement of Research Problem

I see the museum as a place that provides new and interesting encounters with historical and artistic artifacts, and allows people to spend time learning, exploring, and having fun with others. In fact, many elementary, middle-school and college art instructors move their art classes into art museums. For example, they may ask students to sit in front of Claude Monet’s *Impression Sunrise*, get immersed in it, and copy it on a paper using their own skills. Such an

informal learning experience is a productive informal art learning experience compared to only letting students sit in a classroom and listen to lectures.

The NEA's study found that overall, the American art museums were facing a decline in the number of millennials, but not every American art museums were facing this problem. However, the same decline was not found for visiting parks and monuments, or for participating in arts festivals (Pop Culture, 2015). Visiting museums for millennials may not be their first priority. Today with the ever-changing technological development, millennials have diverse ways to spend their leisure time. In America between 2002 and 2012, according to the statistics of NEA, youth attendance at art museums and galleries, among 18-34 old, had dropped at a roughly 20% rate (Vankin, 2016). During the same period, only visits by museum goers 75 and older increased (Cannell, 2015). The latest NEA's study presents that the national average visitor age for art museum attendances in U.S. was 46 (2016). Even the Metropolitan Museum, the largest art museum in the United States and among the most visited art museums in the world with over 5,000 years of art spanning all cultures and time periods, is suffering a decline in attendance among millennials.

I am curious about the kind of museum experience millennials want, what factors allow them to have an enjoyable and productive museum experience, and what are American art museums doing to attract millennial visitors. This study sought to explore some of the groundbreaking ways to apply digital technology in exhibitions, activities, in-gallery interpretations and programs offered by American art museums, how they enhance the interaction of art and technology, and what kind of personalized and customized museum experience they offer millennials. Furthermore, this study studied what features of technological approaches would motivate millennials to use them to enhance their museum experience.

Additionally, this study explored whether millennials gain a better understanding from art objects through these interactive museum experiences and whether these types of experiences motivate them to visit and revisit museums.

Purpose of the Research

The purpose of this study is to demonstrate some of the innovative exhibits and activities at American art museums, and to ask whether interactive digital devices and applications allow millennials to become more fully engaged in art, and enhance their interest in visiting art museums.

Research Questions

The research questions of this study are as follows:

1. What are American museums doing to enhance their millennials' interest in art?
2. What do American art museums perceive to be the factors that may attract millennials to art museums?
3. How are two American art museums using interactive displays and digital technology?
 - a) Do these technologies help to attract millennials to these museums?

Definitions

Millennial: The term 'millennial' is used to indicate American millennials, that is to say persons between the ages of 18 and 35 in 2016 who are art museum visitors. Some of them are uninitiated visitors. Most of them are not familiar with art history but they are an educated audience. They may have different levels of interests in art and technology. They are used to exploring new things using their smartphone or mobile tablet. They likely check social media numerous times a day. In terms of personality, they are more expressive, creative, collaborative, interactive, open to change, but face stronger financial pressures and lower marriage rates than

previous generations, such as Gen X (35 to 54) and Baby Boomer (55 to 74) (Drake, 2014; Pew Research Center, 2010; Pop Culture, 2015; The G Brief, 2015). In this study, these characteristics will be used to describe millennials.

Interest: The term ‘interest’ refers to the benefits of visiting art museums. In this study, these benefits mainly refer to their educational and social values. ‘Educational values’ suggest that visiting exhibits, participating in museum events and activities, and using interactive tools can all offer millennial visitors a new awareness of art and also interdisciplinary knowledge, which includes “language, history, literature, biology, math, business, and more” (Glesne, 2012, p. 100). The term ‘social value’ means that millennial visitors can obtain effective experiences, memories, and new relationships through museum visits and their use of museum services.

Art: For the purpose of this study, the term ‘art’ describes permanent collections and other works of art in American art museums. The term also includes information and stories about artists and works of art.

Technological Approaches: The term ‘technological approaches’ refers to all digital interactive tools used by art museums to enhance the visitors’ experience and learning, including iPad kiosks, audio guides, videos, museum mobile Applications, social media, digital visitor services, digital location mapping, 3D mapping, 3D printers, 3D viewing, 3D immersive graphics, multi-touch tables, multiple-layered games content, augmented reality (AR) technology, information touching searching screens, and gestured-based interactive devices. In this study, technological strategies, approaches, interpretations, and tools refer to the same things.

Non-technological Approaches: The term ‘non-technological approaches’ refers to all interactive tools without technology using to enhance visitors’ experience and engagement,

including viewpoints labels, life labels, pull-out panels, information flyers, and docent tours. In this study, non-technological strategies, approaches, interpretations, and tools refer to the same things.

Chapter Two: Literature Review

Functions of Art Museums

Museums have multiple interdependent and interconnected functions, including collecting, preserving, exhibiting, educating, researching, being a cultural center, and being a social place (Alexander & Alexander, 2008; Hein, 2000). A fundamental function is to engage and educate their visitors about the artworks and artifacts through its exhibitions, activities, educational programs, and research (Whiteside, Atkinson, Stump, Tamir & Lawrence, 2014). Originally, the meaning of museum was “a study or a library” (Thomas, 2010, para. 6). This study defines the functions of art museums as follows:

- A. To exhibit artifacts that enhance the public’s knowledge with the country’s and/or the world’s artistic wealth;
- B. To organize exhibits, tours, events and programs to educate the public about the work of artists or cultural periods;
- C. To bring pleasure to, entertain, and educate the public;
- D. To store, preserve, and protect artifacts that are considered culturally valuable;

For instance, the Louvre Museum is one of the largest repositories of fine art in the world (Thomas, 2010). It is “the Museum among museums” (The Louvre Museum – Missions & Projects, 2017, para. 3). The Louvre is universally known both in terms of “the wealth of its collection and the great diversity of its visitors” (para. 4). It has nearly 35,000 pieces in collection. Of the nearly ten million people who visited the Louvre in 2012, “69 percent were of overseas origin, with 15 percent from the United States of America, 7 percent from China, and 6 percent from Brazil” (para. 4).

Formerly a royal palace, the Louvre has embraced “the history of France for eight centuries,” so a visit to the Louvre is a journey that allows you to explore ancient art objects and also to discover the grand palace – the Louvre Palace, which is a true lesson in architecture and the history of Paris and of France. Intended as a universal museum since its inception in 1793, its collection—among the finest in the world— “spans several thousands of years and a territory that extends from America to the confines of Asia” (The Louvre Museum – Missions & Projects, 2017, para. 4). It is divided among eight departments: 1) Paintings, 2) Egyptian Antiquities, 3) Greek, Etruscan and Roman Antiquities, 4) Near Eastern Antiquities, 5) Sculptures, 6) Decorative Arts, 7) Islamic Art, and 8) Prints and Drawings. This museum’s art works, the *Mona Lisa*, the *Winged Victory of Samothrace*, and the *Venus de Milo*, are admired throughout the world.

The Louvre’s educational department has created a series of innovative and diverse digital apps, videos, workshops and games for children and adults to immerse them in art online or onsite, such as “the Tales of the Museum.” Its workshop has “fifty anecdotes and five stories about the museum and its masterpieces” (The Louvre Museum – Tales of the Museum, 2017, para. 2). If you are curious about *Mona Lisa’s Smile* but you have limited knowledge about it, there is an interesting way to explore this painting by clicking the video of *Will.i.am. – Mona Lisa Smile ft. Nicole Scherzinger* (Louvre Video - Mona Lisa, 2017). This video is composed of a combination of cartoons, opera, pop music, performance, story-telling, a tour of the museum and animation. It is not only an unprecedented way to investigate this mysterious painting, it is also an attractive entertainment for visitors. This is a perfect illustration of the new role of museums because: “Since the advent of the new museology in the 1990s, many in the museum sector have come to see themselves as part of the leisure industry, modifying their practices and

policies in order to become more audience focused” (Anderson, 2004; Vergo, 1989, as cited in Mason & McCarthy, 2007, p. 21).

As well, the Louvre plays a critical role in the restoration of art objects. Regardless of the not too beautiful history of the Louvre’s collection stolen from other countries, including China since the seventeenth century or even earlier, the Louvre preserves not just French but also the world’s art. For example, the painting, “*Saint Louis, King of France, and the Page*, is one of the Toledo painter’s most veristic works” (The Louvre - Departing of Painting: Spanish Painting, 2017, para. 1). All art museums, not only large-scale ones but also small-sized art museums, are dedicated to protect, restore, and exhibit artistic endeavors. They also help the public to learn about them. Education is another core function of the art museums. However, in the context of modern art museums, to achieve this goal museum administration need incorporate educational role with entertainment through new approaches and platforms, especially to cater to young adults.

Art Museum Education

Since the emergence of the first European museums, educators have discussed and defined their educational role. Ramirez (2015) noted four different development periods in art museum education: (a) “Wunderkammer, the cabinets of curiosity that existed from the fourteenth century to the late eighteenth century shows that people are naturally drawn towards art” (p. 1); (b) In the following one hundred years, museums developed from one single room into multiple art spaces with many interesting art works, and collections began to be divided into different categories; (c) “Since the advent of the British museum, the Capitoline museum and later the Louvre in Paris, we can now dissect the historical significance of the changing currents of education within the museum” (p. 2); (d) Since the turn of the twenty-first century, museum

education has evolved. Present-day museum education has shifted to more personalized, and visitor-centered education.

Modern day art museums have proven to be an important and nurturing aspect of interdisciplinary studies, including “language, history, literature, biology, math, business, and more” (Glesne, 2012, p. 100). For example, when one is standing in the Piazza della Signoria in Florence, not only do the marble sculpture collections catch one’s eye; they also provide a glimpse of the entire Renaissance period (e.g., Renaissance history, the Medici family history, the fourteenth to the seventeenth century economic and political history, math, and literature). As well, art museum education can create a connection between otherwise often isolated school subjects. Kansas State University performed a six-week study about this connection in a collaborative effort between teachers and museum educators. It discovered that utilizing museums as a tool to promote an interdisciplinary learning experience was crucial for students in certain subject areas (e.g., mathematics, physics, chemistry, and anthropology) (Villeneuve, Martin-Hamon, & Mitchell, 2006, as cited in Ramirez, 2015). For example, when standing in front of the paintings of Claude Monet, Edgar Degas, Pierre-Auguste Renoir or Camille Pissarro, one might wonder why Impressionism occurred at the end of the nineteenth century. An educator at Princeton University Art Museum claimed that at the end of the nineteenth century the development of chemical technology resulted in new types of colors that allowed painters to create their works outside of their studios. Impressionism is about the outside world and the indoors; the development of chemistry enhanced the birth of a new painting tradition (personal communication with a docent at Art Museum of Princeton University, July 7, 2014).

Besides the interdisciplinary studies aspect, art museum education has another unique feature in that it provides informal learning for audiences. At the University of Pittsburg,

Knutson, Crowley, Russell, and Steiner (2011) conducted a study regarding informal learning and stated that,

The museum [is a] space that will elicit free choice learning on behalf of the visitor,” and it implied “approaching art education as ecology, and as [a] landscape of art learning opportunities that exist across a network of informal and formal education organizations. (as cited in Ramirez, 2015, p. 3)

Audiences can make learning choices freely according to their own desires and interests, which is the most worthwhile feature of museum education. Moreover, researchers revealed that informal education can meet students’ diverse personalities and offer various types of learning. Also, Ramirez (2015) claimed that informal education within art museums can bridge the gap between the formal and the informal by non-traditional teaching methods, such as offering visitors a more participatory experience, breaking down the language barriers through digital technology, and creating more communication access between the public and the specialists. For example, art museum educators can work together with local communities, teachers, and other institutions and organizations, and utilize technology and dialogue to enrich the diverse learning styles of the public. Lastly, in the context of art museums, informal learning can also lead to a lifelong learning exploration for museum goers.

Silverman (2009) has studied the social power of museums and states that their social value is in one of the core missions of museum education in the twenty-first century. For example, millennials love to share their new experiences with friends and family, and hence, more social interactive educational programs should gain their interest. This is another new layer of the pedagogical value of visits to art museum. Moreover, social interaction in the museum is not only a way to experience art and cultivate new meanings, but it also builds lasting

impressions and lasting memories of art works (Ramirez, 2015). For example, as Glesne (2012) remarked, “The campus art museum is thereby used as a solo experience for those seeking quiet moments of reflection, introspection, inspiration, or pleasure” (p.104). Students, faculty, and community members now see the campus art museum as a place to take family or friends, as a social space to share with others. Similar to the “Butterfly effect,” which means that one small act can have great consequences, this is another pedagogical value of art museums.

Today, art museums have a refreshing way of demonstrating their innovative pedagogical values, through using technology to organize lectures and events with artists, curators, designers, writers, and others in the art field. It offers more accessible experience for people, especial for average person without strong art history background who can participate in these and learn about art. For instance, at MoMA, “Programs and Events,” “Artists Experiments,” “Studios,” and “Gallery Sessions” are listed in the Lecture and Event section on the MoMA website (The Museum of Modern Art - Learning, 2016). Overall, in the twenty-first century, museum educators attempt to establish significant contacts between art objects and museum audiences and create a visitor-centered experience for them (Daniels, 2016).

American Art Museums

This part will review the American art museums’ collections, their funding, their education, and their relationship with their visitors during their more than two hundred years of development. Lachmann, Pain and Gauna (2014) stated: “American art museums were founded in the Gilded Age, a period from the 1870s to the end of the nineteenth century” (p. 60).

Funding. A wealthy elite controlled American museums from the Gilded Age to the beginnings of the twentieth century. Unlike the eighteenth-century Europeans, Americans were not born with fine art, historic architecture, classic masterpieces, or antiques, and therefore, in

the early years of American museums “European culture dominated these relatively new American cultural institutions, and Americans proudly presented the work[s] of elite Europeans as their heritage” (Daniels, 2016, p. 26). Wealthy Americans travelled to Europe to collect masterpieces following their own tastes, and their personal collections turned into the first American museums; moreover, these wealthy collectors maintained a high degree of control over American museums until the 1920s (Lachmann et al., 2014; Daniels, 2016).

Nevertheless, since the elites provided early American museums with their funding and art objects and there were no museum professionals, such as curators, and no government financial support for museums in America, the museum administration had to follow the elite’s preferences in their choices of art that could be displayed in exhibitions (Lachmann et al., 2014). Zolberg (1981) stated that these elites assessed their art museums mainly in terms of the quality of the art in their collections rather than by the number of visitors (as cited in Lachmann et al., 2014). Worldwide, Cook (2007) asserted that museums evolved into public institutions only in the late eighteenth and early nineteenth century. For American museums, “during the second half of the nineteenth century, the museum’s role in disciplining a broad and diverse public only grew more pronounced” (Lubar, Rieppel, Daly, & Duffy, 2016, p. 4).

“Starting from the 1920s, some municipal governments (most notably New York City and Detroit) began to provide funding to museums for “building, maintenance, and educational” (DiMaggio, 1991, as cited in Lachmann et al., 2014, p. 61). During the Great Depression, two important changes happened to American art museums. The economic crisis weakened original wealthy Americans’ control over museums, but it enhanced attendance by the growing middle class; at the same time, the Art History programs in universities began to develop, and graduates

from these programs became the first-generation of curators, who established the American Association of Museums.

By the middle of the twentieth century, the first-generation curators accomplished two goals: (a) they emerged themselves as museum professionals; (b) they started to assess the donors' and trustees' opinions about what art should be exhibited and how the exhibitions should be organized (Zolberg, 1984, as cited in Lachmann et al., 2014). At the same time, some trustees, like Andrew Carnegie, began to realize the importance of these professionals and their knowledge, skills and experience. As a result, trustees gave up "a certain degree of authority to professionals," and admitted that, "A great museum has great curators" (p. 61). Thus, for the first time in American museum history, professionals got a certain degree of authority over the museums' management.

Between the 1970s and 1990s, museum professionals pursued this full increased autonomy to decide how and what art works should be collected, shown and preserved "without interference from donors, funders, museum trustees or the non-curatorial administration of their museums" (Lachmann et al., 2014, p. 62). At the same time, Alexander (1996) indicated that new and diverse sources of funding were found for American museums (as cited in Lachmann et al., 2014). Governmental spending on museums, independent foundations, and corporate funds, all increased during this era. DiMaggio (1991) found that "support from independent foundations grew from about \$12.6million in 1955 to approximately \$350 million in 1984", and DiMaggio (1986) also noted that new fund providers believed "that art is a good thing and that it should be spread around, [and they] encouraged cultural institutions to [show] interest in expanding their publics and serving their communities" (as cited in Lachmann et al., 2014, p. 62). Museums obtained funding from the National Endowment for the Arts as well as state arts councils. These

new sources of funding weakened the original founders' financial leverage and empowered the curators to manage the museum according to their professional criteria. Within this context, museum managers and curators became more truly professional and gained more autonomy (2014). New sources of funding offered a new life and new developmental opportunities for museums.

However, since the end of the twentieth century, the museums have experienced some challenges and have not succeeded in their desire to achieve broader attendance and introduce a wider range of exhibits (Lachmann et al., 2014). The one main reason is that the amount of federal funding has been cut. "National Endowment for the Arts funding peaked at \$176 million in 1992 and then fell each year of the Clinton Administration, bottoming out at \$98 million in 2000. In 2012, it was \$146 million" (National Endowment for the Arts, 2012, as cited in Lachmann et al., 2014, p. 62). This reality has taught museum administrators that they must attract more private funds. Meanwhile, the U.S. government encouraged private donors to support museums through the enhanced Federal deductible tax policy (2014). American art museums needed private donations much more than in all previous eras. This situation persists today. For instance, the president Trump proposed to eliminate government funding for museums in his first federal budget plan. American museums now are facing a greater pressure to attract more members from young generation for increasing fundraisers. Thus, it is easy to understand why American art museums focus on serving the local community, organizing special exhibitions, events, and education programs, and encouraging young people to be patrons. For example, the special exhibition is a solution to attract potential donors because they are not only part of the museum audiences, but also potential art investors. Special exhibitions can "boost the market value of museums' collections since works shown in museum exhibits generally gain

value over and above comparable works not given that recognition” (Moulin, 1987; Velthuis, 2007, as cited in Lachmann et al., 2014, p. 63).

Education. Museums are a cultural center and its fundamental goal is to engage and educate audiences through exhibitions and activities. From the early appreciation of Fine Arts, American museums, besides being the urban places for audiences to gain aesthetic inspiration, already cooperated closely with local educational institutions (Daniels, 2016). Regarding their educational value, in the mid-nineteenth century, early museums in America were like an Athenaeum “that were institutions of learning, private libraries for gentlemen to read, converse, and even play chess, while in the presence of beautiful art” (2016, p. 27). Apparently, they did not consider women worthy readers since they were not allowed entry into the museums. At that time, this version of museum education was only open to “those who had the time, connections, and knowledge to participate”, and not to the general public (2016, p. 28). Later, the formal art museums occurred in America. Early American museums established a close relationship with local educational institutions, and expanded the museum education from isolated private groups to the public. For example, the Museum of Fine Arts Boston (MFA) was established in 1870. The history of the Museum of Fine Arts Boston, reveals good cooperation and communications between museums, libraries, and universities. Harvard University, the Massachusetts Institute of Technology, and the Boston Public Library held the seats on the board of the MFA.

At the end of nineteenth century or at least until the turn of the twentieth century, there was a debate in American museum circles about whether the educational value or the high standard of aesthetic integrity should be the top task for museums. Some museum professionals, like Edward Robinson (1858-1931), who was the second Director of the Museum of Fine Arts in Boston, were dedicated to extending museum educational value (Daniels, 2016). On the other

side, Matthew S. Pritchard, who became Assistant Director in the Museum of Fine Arts, Boston, said, “The aim of a museum of art is to establish and maintain in the community a high standard of aesthetic taste” (2016, p. 30). Pritchard’s conservative view won this debate at the Museum of Fine Arts Boston. The museum’s funding and space firstly and mainly satisfied the original aesthetic works, which is why the present-day MFA hosts a wide-ranging, internationally famous, collection of original works of art. We cannot say the conservative view won over all art museums during this period, but the MFA as a high-profile museum represented a typical trend.

At the turn of the twenty-first century, the official documents published by the governing organizations of museums and written by museum leading professionals reflected a very different emphasis, on education. In 2015, the American Alliance of Museums (AAM) published the Code of Ethics for Museums. This document stated that, “Taken as a whole, museum collections and exhibition materials represent the world’s natural and cultural common wealth.... It is incumbent on museums to be resources for humankind and in all their activities to foster an informed appreciation of the rich and diverse world we have inherited” (AAM, 2015, as cited in Daniels, 2016, p. 58). This statement emphasized that American museums are a part of the dominion of global cultural heritage, and the global humanity would benefit from the objects in American museums. Moreover, this official document strengthened the value of embracing and enhancing the diversity perspectives in museum education (Daniels, 2016).

As well, regarding museum education in the twenty-first century, leading museum scholars confirmed that education is the top priority among other museum goals; furthermore, technology is an important tool for the learning in museums. The AAM Directors (2015) stated, “The principal purpose of art museums is education. While the purpose remains the same, the means and methods of accomplishing this goal continue to evolve, nowhere more so than with

respect to the Internet” (as cited in Daniels, 2016, p. 58). *Excellence in Practice* (2015), stated that “appropriate technologies are used to expand access to knowledge and self-directed learning” (AAM, 2015, as cited in Daniels, 2016, p. 59). Another distinctive perspective of museum education in this new century is that museum education is tightly rooted in the concept of visitor-centered experiences (2016). Based on the research on the museum visitors, Hein (2002), an educational theorist, emphasized the two priorities of museum education: “the learning process more than content, and the importance of developing skills, such as open inquiry and acknowledging diversity of opinion, rather than on presenting pre-determined facts” (as cited in Daniels, 2016, p. 62). Overall, in the twenty-first century, fostering the diverse cultural perspectives, implementing technology in museum education, and creating a visitor-centered experience, are the core of museum education.

Collections. Having examined how American museums came about, what happens to the collections as times and interests change, museums grow, or decay, and be closed? In May 2015, Brown University hosted a conference about “The Lost Museums: A Symposium on the Ephemeral & Afterlives of Museums & Collections,” and Lubar, Rieppel, Daly, and Duffy (2016) published *Lost Museums* based on the discussion and findings of this conference (p. 2). At this conference, attendees discussed an idea whether museum collections ought to be permanent. This question has been asked in museum circles since the first museums opened, indeed, people are willing to think that museums are to stay forever, that they are timeless and without end (Lubar et al., 2016). For example, “the International Council of Museums definition of a museum... features the word ‘permanent’” (2016, p. 1). Michael Mares, former director of the Nebraska State Museum, stated, “it is the moral obligation of administrators to maintain their museums at whatever cost.... Museums are forever” (Genoways, 2006, p. 96); and, “the

American Alliance of Museums Code of Ethics uses the phrase ‘for posterity;’ its collections stewardship standards ‘future generations’” (2016, p. 1). However, nothing is to last forever, including museums. While Mares agreed with the statement that museums are forever, he still mentioned that “no one ever said that the road to ‘Forever’ would be easy” (Genoways, 2006, p. 96).

At the beginning of the twentieth century, American art museums started a debate on a proper size of collections and how to deal with the large size of collections, and this debate lasted the whole twentieth century (Lubar et al., 2016). In *Lost Museums*, in 1917, Jackson (1917), the Minneapolis Institute of Arts told fellow members of the AAM, stated that there was a danger for museums to become “storehouses of dead art” (as cited in Lubar et al., 2016, p. 6). At that time, indeed, many museums had cut their collections. For example, at the Metropolitan Museum (Met), Baetjer (2004) traced the information of the Met’s original 174 European old master paintings in 1871, and found that only sixty-four remained in 2004, because ‘the trustees from time to time have deaccessioned and authorized the sale of those paintings judged unworthy of an increasingly distinguished permanent collection’ (p.182). Indeed, the Met’s management supported the pruning of a certain number of its collections. For example, in 1919, deForest, the Met’s director, suggested that his colleagues give up the belief that collections are useful forever (2016). Overall, these were the methods of resolving the problem of too many collections in museums. They became more selective, exchanged art objects between different museums, sold or transferred artifacts to other cultural institutions.

In the first half of the twentieth century, transfer of art objects between museums was common (Lubar et al., 2016). Altshuler (2005) claimed another interesting transfer between two famous New York art museums, the Met and MoMA, that following an agreement signed

between these two museums in 1947, “MOMA was to keep collections for a short time, perhaps fifty or sixty years, and then, when they were not modern any more, transfer them to the Met” (as cited in Lubar et al., 2016, p. 6). Currently, transfer may be less common, but still happens. For example, Brooklyn Museum transferred its costume collection, around 23,500 objects, to the Metropolitan Museum of Art in 2008.

In recent decades, after a long process of debate and practice of dealing with collections, American museum professionals came to a modern idea regarding permanent collections - that different museums have different situations, and different museums need different standards (Lubar, et al., 2016). *Lost Museums* presented some distinguished ideas adopted “during this period: In 1974, Stephen Weil, a museum philosopher and lawyer, suggested “selling the collections to fund other museum operations”; Washburn of the Smithsonian, was concerned “that museums were running out of room..... that prevented new collecting,” and he proposed that “museums retain only those things that earn their keep...[can] record and photograph objects of secondary importance, and dispose of the real thing”; by the 1980s, Weil changed his mind to the idea that different types of museums use different ways to keep their collections (2016, p. 7). Off-site storage is a relatively new strategy to keep the art objects that are unlikely to be exhibited or used often in a museum. Currently, some museum professionals think that people are more important than the art objects, and the museum’s influence is more important than the size of collections, like “Sheila Brennan urges us to think radically about collections, using them rather than storing them, ‘making room by letting go’” (2016, p. 10).

Besides studying the collections’ fate, the question remains: are museums to last forever or not? Lubar et al (2016) wrote that there are more museums that were dead in America, or out of business than one could imagine, including some famous museums. For example, “the

Museums of Biblical Art and the National Academy Museum, both in New York, substantial museums with important collections, [were]closed within the past year” (2016, p. 7). It did not only happen in the U.S.; “between 2010 and 2016, forty-four British museums were shuttered according to the statistics of the Museums Association” (Brown, 2016, as cited in Lubar et al., 2016, p. 8). Goode (1891), first director of the US National Museum, famously stated that “A finished museum is a dead museum, and a dead museum is a useless museum” (p.445).

“Museums live only as long as they are deemed useful, and that means that they must change to keep up with the times” (Lubar et al., 2016, p. 8). One more question arises: If we accept such utilitarian approach to art and culture, how to keep museums useful? The main asset in museums are their collections, which are the most distinctive features for the museums. Thus, utilizing the collections, such as engaging and educating the visitors, is the core commission for museums. Museums can achieve and keep this long-term survival if they can find “a balance of preservation, utilization, even consumption” (2016, p. 11).

Who are Millennials?

The term “millennial” is usually considered to apply to individuals who, in 2016, ranged from teenagers of 13 years of age to adults up to 35 years. The precise definition varies: (a) Howe and Strauss, authors of *Generations: The History of America's Future, 1584 to 2069*, defined “the Millennial cohort consisting of individuals born between 1982 and 2004”; (b) “in separate articles, the New York Times pegged the Millennials at 1976-1990 and 1978-1998”; (c) “a Time magazine article placed the Millennials at 1980-2000” (Rouse, 2015, para. 2). In this study, I chose to loosely define millennials as young American adults born between 1981 and 1998. This timeframe means they were between 18 to 35 years old in 2016. To the following section will explore the “typical” characteristics of American millennials. Although there may be

many similarities between American millennials and other countries' millennials, or there may be huge differences; for the purpose of this study, I am only considering the term as it seems to apply to Americans of this age range.

American Millennials. Based on a cross-national survey of 2,020 adults, the Pew Research Center (PRC) in 2010 released a series of reports to explore the behaviors, values, identities and traits of American Millennials. The PRC's 2010 reports found that millennials are supposedly more expressive, creative, liberal, collaborative, interactive, ethnically and racially diverse and open to change than previous generations. They respect their elders and get along well with their parents; are less religious, less likely to serve in the military and they are on track to becoming the most-educated generation in American history. Other new findings are "Millennials are more burdened by financial hardships than previous generations, but they're optimistic about the future," and "Just 26% of Millennials are married. When they were the age that Millennials are now, 36% of Gen Xers, 48% of Baby Boomers and 65% of the members of the Silent Generation were married" (Drake, 2014, para 2 & 3).

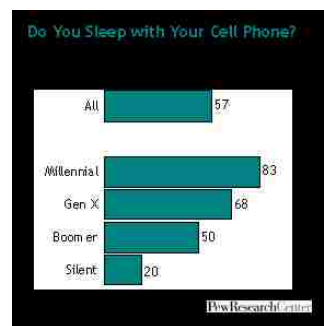


Figure 1 (PRC, 2010)

The PRC also discovered that millennials' technological abilities are overwhelming. For example, in America "three-quarters of millennials have created a profile on a social networking site, compared with half of Xers, 30% of Boomers and 6% of Silents." In addition, "millennials are also more likely than older adults to say technology makes life easier and brings family and friends closer together" (PRC, 2010, paragraph 31, see Figure 1). Furthermore, "most Millennials (61%) in PRC January 2010 survey say their generation has a unique and distinctive

identity” and they have a good reason for feeling distinctive and “24% say it’s because of their use of technology” (2010, paragraph 29).

Culture Track is the largest tracking study focused exclusively on the ever-changing attitudes and behaviours of U.S. cultural consumers, as well as on the trends in attendance and the motivators and barriers that affect participation. The Culture Track 2014 study derived from LaPlaca Cohen’s research and dedication over a decade to produce a current, highly-actionable resource for the leading cultural institutions across the nation. Culture Track 2014 found that “millennials think of museums as spaces to think inwardly and develop identity, much more so than older generations” (The G Brief, 2015, para 6).

In the context of art museums, millennials are always willing to explore new experiences and view museums as “spaces of cultural enrichment” that contain new but also centuries-old, interesting experiences (Pop Culture, 2015, paragraph 2). Millennials are attracted to museums, but they are not visiting museums that often. As a whole, American museum are facing declining visits by millennials.

Museum Visitors’ Motivation

Before I explore whether millennials can have an enjoyable and productive art museum experience through the interaction of art and technology and discuss how American art museums can enhance the millennials’ interest in visiting art museums, I need to know what the visitors’ motivations are, and what factors shape their visitors’ motivation.

Intrinsic Motivation. Intrinsic motivation refers to “behavior that is driven by internal rewards” (Cherry, 2015, para. 1). In other words, the motivation to engage in specific behaviors arises from individual internal reasons, as opposed to external rewards. I am neither an artist nor an art specialist, and I have never had any form of professional art education; however, I am a

big fan of art museums. As a museum lover, Glesne (2012) had an experience similar to mine. She writes that: “I am neither an artist nor an art historian. I have never worked in a museum nor taken classes in museum studies,” but goes on to state that she loves art museums (p.100).

I wanted to know why I have such a strong inherent interest in art. Maybe some of it came from my parents. They love the arts. Whenever I travel to a city or a country that I have not yet visited, art museums and galleries are always on the top of my list. I always like to spend as much time as possible in these venues; to explore works of art and jot down all the details about what I have observed, including the artwork, the audiences, the environment, as well as my personal reflections. I like to talk to docents, museum educators and other visitors and when I review my notes, I share the knowledge I gained at art museums with my peers, my friends and my family. Thus, more and more of my friends and my family have started to love to visit art museums. These are all positive outcomes that I have gained from my museum experiences.

Over a period of several decades, museum researchers have been working on describing and understanding their visitors’ identities in order to know “whether or not people want to visit museums or what they will do in the [museums] and remember from [their] experience” (Falk, 2013, p.111). Falk (2013) indicated that researchers utilized “traditional demographic categories” (e.g., age, education), gender, “other tangible categories” (e.g., visit frequency – frequent, infrequent, non-visitor), “social arrangements” (e.g., school group and young adult), and “sophisticated psychographics” to analyze museum visitors’ behavior and gain some understanding for each category (p.110). Nevertheless, Falk (2013) argued that, “although [their findings] are on average true, museum visitors are not average, they are individuals” and “museum-going is far too complex to be understood merely on the basis of easily measured, concrete demographic or psychographic variables” (p.111). Furthermore, Falk and his colleagues

did hundreds of in-depth interviews over the last ten years in which they talked to visitors about their museum experience and concluded that a visitor's personal identity provides a key to predict the nature of their experience. Falk emphasized that museum educators should strive to create personal visitor experiences that can shape and maximize the impact of audiences' engagement and learning (2013). In conclusion, I believe that my own museum experiences, reflect prior research findings: my personal tastes have been extremely important in motivating me as a millennial when exploring art museums.

Millennial Cultural Consumers' (MCCs) Attendance Motivations

MCCs are "the potential key consumers" for present-day cultural institutions (Vaux Halliday & Astafyeva, 2014, p.120). Following the Vaux Halliday and Astafyeva's monograph, MCCs' attendance motives are presented below:

a) *Social interaction*

It can be identified "as a central driver, and includes the feeling of belonging, desire for recognition and social interaction" (Bhattacharya, 1995, McAlexander, 2002, Muniz and O'Guinn, 2001 & Slater and Armstrong, 2010, as cited in Vaux Halliday & Astafyeva, 2014, p. 126). For present-day millennials, this motive is a top priority (2014).

b) *Entertainment and experience*

This motive is highly connected to "an awareness/self-actualization motive, as well as balance in work-life/education-entertainment motive of the Millennials' consumption" (Vaux Halliday & Astafyeva, 2014, p. 126). Additionally, this motive can be helpful for cultural organization professionals with one of the current issues: how to incorporate entertainment with marketing strategies without scarifying educational role (2014).

c) *Self-development*

“Individual education, the development of interests and knowledge, as well as an ability to contribute to a greater whole” compose this motive (Baumgarth & Kaluza, 2012 & Fournier and Lee, 2009, as cited in Vaux Halliday & Astafyeva, 2014, p. 126). In terms of art museums, this motive is the key for them to face and manage the challenge of new educational desires among visitors, as well, how to trigger young adults to visit museums for educational goals (2014)

d) Prestige

This motive is closely related to the personal status of the visitor, and mainly about the reputation for museums, artists’ popularity, unique exhibitions and art activities that some celebrities would participate (Bhattacharya et al., 1995; McAlexander et al., 2002; Muniz and O’Guinn, 2001; Slater and Armstrong, 2010, as cited in Vaux Halliday & Astafyeva, 2014). Millennials are willing to maintain and develop their social connections during visiting museums, so this driver is critical for them because it can affect their current relationships, and create new relationships (2014).

Declining Visits of Millennials to American Art Museums

“[At the beginning of twenty-first century], one of the groups that museums continually fail to cater to, despite their efforts to broaden and diversify their audiences, is the younger age group—teenagers and young adults” (Mason. & McCarthy, 2006, p. 22). Established by Congress in 1965, the NEA is an American independent federal agency whose funding and support gives Americans the opportunity to participate in the arts, exercise their imaginations, and develop their creative capacities and carries out extensive research into museums (NEA, 2017). The NEA study demographic group participation in art through the dataset from “gender,

race and ethnicity, age of arts participants, urban/rural patterns of Arts Participation, and job analysis of arts participants” (NEA, 2016, para 5).

A study from the NEA found that overall museum attendance dropped 5 percent from 2002 to 2012 (Cannell, 2015). During the same period, among 18-34 old, young attendance at art museums and galleries has dropped at a roughly 20% rate, according to NEA’s data (Vankin, 2016). However, “visits by women and minority groups remained steady,” while museums attendances of millennials declined (Guenther, 2014, p. 6). Regarding art consumers, an interesting fact was that,

Visits by women and minority groups remained steady...arts consumption through electronic media, including listening to music and watching videos, by U.S. adults was 71 percent in 2012, but only 8 percent specifically viewed visual arts, according to the latest Survey of Public Participation in the Arts. (Guenther, 2014, p. 6)

Another NEA’s study showed that more millennials visited museums in 2008 than in 2012 - “in 2008 23% of 18-24 year olds and 24% of 25-34 year olds visited an art museum or gallery once that year and in 2012, only 18% of 18-24 year olds and 22% of 25-34 year olds did so” and number of visitors 65 and over increased (Pop Culture, 2015, para 5).

Interestingly, “the same statistics’ decline was not found for visiting parks and monuments, or for participating arts festivals” (NEA, 2016, para 6). The good news is that adult attendees at art exhibits was getting steady between 2013 and 2015. The NEA has issued results that “in 2015, 19 percent of adults or 45 million attended an art exhibit. [This rate is] similar to the share of adults who attended in 2013, [furthermore], between 2013 and 2015, young adults, ages 18 to 24, tend to participate in the arts at higher rates than adults in general” (2016, para. 8). During the same period, art museums located at western states or eastern states, like

Maryland and Vermont, had stronger number of young attendees between 2013 and 2015 than previous years ago; others located at southern states such as Mississippi, West Virginia and Florida were suffering a low rate of attendances (2016). The NEA also presented that the national average visitor age for art museum attendances in U.S. is 46 (Vankin, 2016). Overall, U.S. average art museum goers are getting older.

Millennials' Perceptions of Art Museums

Even though many art museums have large and renowned collections, and may be located in the heart of a city surrounded by universities, they still cannot draw many young adults to visit them. For example, “the Auckland Art Gallery of Auckland houses the country’s major collection of 12,000 works of painting, sculpture and mixed media”; as well, “[it] houses temporary exhibitions of contemporary New Zealand art” (Reeves, 2003, as cited in Mason & McCarthy, 2006, p. 24). It is located at the center of Auckland, where the two large universities with total of 12,000 college students are only two blocks away. However, the gallery management still needs to figure out why there are so few young adult visitors in a location of high pedestrians traffic.

Bartlett and Kelly (2000) have reported that, “youth audiences have poor perceptions of museums, which they see as boring, didactic, unapproachable and preoccupied with the past, in contrast to young peoples’ interest in the present and future” (Mason & McCarthy, 2006, p. 22). And they think that they do not belong to museums and there is no harmony between the culture of museums and the culture and identity of young people (2006). In May 2003, two researchers did a survey of 200 people between 16 and 26, with equal numbers of males and females responding. All participants were pedestrians around the Auckland Art Gallery. Most of them

were students, but they also included the unemployed, international tourists and others. Some young people, researchers pointed out, said

The gallery made them think of people such as my dad, old people and even people who wear berets”; the large number of reflections from the participants were “that the gallery was boring... the recollection of its quiet atmosphere suggests that the gallery’s ambience is far from appealing to youths as a space for leisure activity. (2006, p. 26)

In the survey, when asked about the kind of people that go to art galleries, “40.2% stated [that they are] artistic people, such as people who like art, cultured people, classy people, and sophisticated people”, and “only 14.6% thought students typically went to galleries” (2006, p. 27). When asked about the kind of exhibition they would you like to see in the gallery, more than half of respondents chose contemporary art and non-painting (2006). When asked - If you were the manager and you wanted to make the gallery more attractive to young people, what would you do? - the answers included “Types of Art”, “Advertising”, “Youth Focus”, and providing “Incentives”. Most responses were “Types of Art” and “Advertising” (2006, p. 28).

This survey revealed that young people do not have big interest in visiting art museums because museum’s service cannot satisfy their identity, tastes, lifestyles and (2006). Many young people do not feel at home in galleries. It is necessary for museum management to make changes, such as including a greater variety of art styles, more innovative ways of exhibiting, more vigorous atmosphere and layout, more advertising, and younger museum staff.

Attracting Millennials to Art Museums

I love art museums. My cousin, a Canadian millennial who is a third-year undergraduate student at McGill University with a major in finance with a 4.0 GPA, does not. To her, they are outdated institutions and places where she does not feel that she belongs. She would much rather

spend hundreds of dollars to hang out with her friends at the Wonderland Park in Toronto for the day than spend 15 dollars to explore an art museum, such as the Montreal Museum of Fine Art, for two hours.

In the U.S., museum circles acknowledge the fact that attracting millennials to art museums has been a challenge. Wills (1990) noted that “Most young people see art as something remote and institutional, something that is set apart from their common, everyday culture and fun” (as cited in Vaux Halliday & Astafyeva, 2014, p. 120). And Arts Council England (2006) stated that “museums and art galleries are dull, and even boring for young people” (as cited in Vaux Halliday & Astafyeva, 2014, p.121). Although some museums are located right on college campuses, it is still not always easy to engage Millennials. The main reason is the strong competition among different cultural institutions and organizations for the Millennials’ leisure time. Millennial audiences also expressed that they perceive the content and missions of many museums as not matching their interests and values (Phillips, 2010).

On the other hand, some American millennials are interested in art museums. In preparing for the 2010 Annual Conference of Michigan Museums Association, Phillips, the President of Brand Amplitude, and her colleagues did a survey among American millennials to figure out what they think about museums. Among their findings, the good news was that “millennials say they enjoy museums and think they are a good value” (Phillips, 2010, para 5). However, the bad news was that “they devote the small portion of their leisure time spending to museums and less than they spend on other activities like eating out, movies, theaters or fitness” (2010, para 7). “One of the possible reasons, found Mason and McCarthy, is that most exhibitions and their marketing methods do not match the young peoples’ worldview” (Mason &

McCarthy, 2006, as cited in Gofman, Moskowitz, & Mets, 2011, p. 602). This gap in catering to the millennials between attitude and behavior represents an opportunity for museums.

To reduce the feeling of exclusion among many millennials attendees, museums could experiment with changing missions and services to attract more young visitors. Gilmore and Rentschler suggested “that museums should innovate to draw visitors” (2011, p. 602). Following the Gofman et al monograph that surveyed 224 U.S. participants ages 18 to 35 to analyze “what drives the interest of young people?”, they stated two non-traditional ways to attract young visitors. One is “to involve young visitors by utilizing modern technology popular” (Lopez, Daneau, Rosoff, & Congdon, 2008, as cited in Gofman et al., 2011, p. 602); another way is to attract young visitors by involving them in the design and advertising of exhibitions (Xanthoudaki, 1998, as cited in Gofman et al., 2011, p. 602). Indeed, museums administration, like marketing and communications departments, and some curators, consider that the usage of digital platforms and devices is the future of art museums (Guenther, 2014).

Technology-based Interaction in Art Museums. The interaction of art and technology is the future of art museums. “The most recent edition of the Association of Art Museum Director’s Next Practices series, which aims to share innovative initiatives in the museum field, focuses on Next Practices in Digital and Technology” (Association of Art Museum Directors, 2015, p. 2).

“Today’s digital revolution is providing a dizzying array of tools that offer opportunities for learning institutions all over the world to become more vibrant and accessible. This revolution provides the means to share vital information [and] enabling people to learn more” (Clough, 2013, p. 2). Within this revolution, barriers of time, money or location are significantly removed so that people can get more accesses to data and knowledge that previously was only

available to the professionals (2013). Art museums can use digital technology and digital devices, such as the LUMIN device at the Detroit Institute of Art that started visitors' test on Jan 20, 2017, to enhance visitors' engagement with art. "The implementation of digital technology in museums enhances an active engagement with art, thereby fostering art education" (Enhuber, 2015, p. 121). In fact, Clough, secretary at the Smithsonian Institution, noted "for museums, technology has created a golden age of opportunity" (Clough, 2013, p. 2).

Digitization is "the conversion of analogue information in any form (text, photographs, voice, etc.) to digital form with suitable electronic devices (such as a scanner or specialized computer chips) so that the information can be processed, stored, and transmitted through digital circuits, equipment, and networks" ("Digitization", 2013). "This is the simplest of technological enhancements, which can be used to convert real artworks to their digital projection or counterparts" (Enhuber, 2015, p. 123). In the context of art museums, all digital electronics, apps, interactive devices and exhibitions using technology are diverse implementations of the digitization of art.

Furthermore, "the consumer's role is increasingly changing, and consumer market experiences and relationships with companies are becoming more interactive" (Cove & Dalli, as cited in Vaux Halliday & Astafyeva, 2014, p. 122). Marketing researchers argue that in the middle of the last century the consumer did not care as much about their own feelings, self-expression and personalities as today's consumers do (2014). According to Holbrook, Hirschman, and Levy, the present-day consumer's perspective explores "the symbolic meanings of more subjective characteristics" (Holbrook, Hirschman, & Levy 1959, as cited in Vaux Halliday & Astafyeva, 2014, p. 123). This shift is "particularly suited to the arts product and provides interesting, creative new opportunities for the more successful promotion of the arts

experience at museums and galleries”, which fits well with MCCs’ concerns (2014, p. 123).

Mann, Deputy Director and Chief Curator of the CMA noted that “Technology is a vital tool for supporting visitor engagement with the collection” (Cuscott, 2013, para 6).

Clough addressed that with digital technology “real art space is transformed into digital art space, conveyed in a variety of forms, which can open up unprecedented possibilities and change the way in which art is consumed” (Enhuber, 2015, p. 121). How in fact does the technology affect the audiences’ art museum experience? In the context of museum, the integration of digital technology can change how art is consumed in museums. Implicitly, the digitalization enhances “democratization”, “education” and “socialization” within the relationship between visitors and arts (2015, p. 128). I understand that Enhuber’s “democratization” to mean that art museums gain a wider range of audiences, especially for non-professionals, through utilizing technology; Enhuber’s “education” to mean that art museums help visitors engage in art more productively through digitization, and Enhuber’s “socialization” to mean that art museums become a welcoming space for social life through interactive technology. I totally agree with Enhuber; democratization, education and socialization can cover all effective outcomes of the integration of technology and art.

Considering the millennials’ motivations, characteristics, and perceptions of arts, and declining attendance of American millennials, it is certainly worth a try for American art museums to use interpretive technology to engage visitors actively in new kinds of experiences with works of art, to have more fun with art and to achieve productive learning experiences. For example, some strategies for making art accessible to a wider public would include exhibiting arts using robots, interactive installations, mobile devices and museum applications. Below are real examples to show how to implement technology into art museums: Gallery One and the

ArtLens App at the Cleveland Museum of Art, LUMIN digital device at the Detroit Institute of Art, the Pen at the Cooper Hewitt, Smithsonian Design Museum, virtual-reality goggles for viewing Jackson Pollock paintings at the Metropolitan Museums of Art, and Nintendo 3DS devices at the Louvre.

The discussion of engaging the visitors with the interaction of art and technology enhanced the creation of Bloomberg Connects, an initiative aimed at “supporting the development of state-of-the-art technology, from mobile applications to immersive galleries and other dynamic tools, designed to transform the visitor experience, encouraging interaction and exploration of cultural institutions on and offsite” (Bloomberg Philanthropies, 2017, para. 1). Bloomberg Connects has provided \$96 million dollars to fund the 15 cultural institutions to enhance visitors’ experience through technology, including the Solomon R. Guggenheim Museum, the Metropolitan Museum of Art, the Art Institute of Chicago, the New York Botanical Garden, and the Museum of Modern Art to integrate mobile technology into their institution (2017). The interactives offer visitors personalization strategies and customization methods to explore the collections and form new relationships with museums. Many prominent museum studies have highlighted these personalization and customization as an effective and necessary engagement strategy for 21 century visitors (Loesser, 2016).

Marketing Art Museums to Millennials Using Social Media. Millennials love to share and connect with their friends and family using social media. Indeed, social media has become an integral part of millennials’ daily life. “In June 2012, 34.3 percent of the whole world population was using the Internet. In Europe, 63.2 percent and in North America even 78.6 percent of the population was online” (in Internet World Stats, 2012, as cited Nierenberg, 2014, p. 17). In America, the PRC 2010 study showed that three-quarters of millennials had a profile

on a social networking site (PRC, 2010). As well, another interesting figure from the PRC 2010 was that 83% of millennials sleep with their cell phones. While a variety of definitions for the term social media currently exist,

A common definition first suggested by Kaplan and Haenlein in 2010 is to see them as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, which allows the creation and exchange of user-generated content. (Kaplan & Haenlein, 2010, as cited in Enhuber, 2015, p. 131)

There are various types of social media, such as Facebook, Twitter, Google+, Instagram and YouTube. Museums first saw social media as a marketing tool. “Social media sites have been used since the early 2000s to give museums a recognizable face as an extension of their branding activity” (Kidd, 2011, as cited in Padilla-Meléndez & del Águila-Obra, 2013, p. 893). According to Pescarin and Cerato (2016), social media could achieve four goals in the context of museum:

- a) inform the public: today in fact people mainly use these platforms to search for practical information about museums, such as opening time;
- b) attract a broader audience: as a social strategy, social media promote museums’ collections, events, programs, and temporary exhibitions;
- c) involve local communities: these social interactive platforms offer an opportunity to keep touch with audiences and potential visitors and enhance the information communication between museums and the public;
- d) teach and tell the background, stories and knowledge of art objects (p. 2).

And, as for museum marketing, Kaplan and Haenlein defined social media marketing as “electronic word of mouth (WoM)” (Enhuber, 2015, p. 131).

Technology-based interaction in art museums demonstrates how the integration of digital technology into innovative learning tactics of museums enhances visitors’ engagement, participation, and experience with art objects. Yet the museum’s mission is not only to improve

on innovative learning through the interaction of art and technology; but to also strive to maintain and increase attendance of millennials, which is critical for art museums (Falk & Gierking, 2000). Museum attendees want “more than just attend cultural events” and more people want that “the museum should become a social space” (Simon, 2013, as cited in Enhuber, 2015, p. 131). For example, the L.A. Broad Museum is not only a new modern art museum, but also a bustling social scene. “[L.A. Broad Museum’s average visitor age is 32 — a full 14 years younger than the national average for art museum attendance in the U.S., according to the National Endowment for the Arts’ most recent study” (Vakin, 2016, para 3). Attendees normally need to be waiting in line to enter the museum for 45 minutes during weekdays, twice that on weekends. However, nobody complains about it; indeed, they enjoy their waiting time pretty much by exchanging snacks, gossip and phone numbers with new friends. As previously mentioned, social interaction and entertainment are two main attendance motives for the MCCs. One visitor, Tiffany Ming aged 27, said “We got food at the trucks, talked. We waited about an hour, but it only felt like 10 minutes” (2016, para 12). Visiting an art museum is a social event especially for millennials.

For millennials, social media is an extension of WoM, and as Linnemann (2012) stated: “Word of mouth brings the vast majority of people into a museum” (p. 19). The use of Facebook, Twitter or other Web 2.0 applications within the context of an art organization as a socially active museum enhances the sharing of the visitor’s meanings, values and experiences with others, and truly achieves the possibility to more easily communicate with visitors via Web 2.0. (Enhuber, 2015). For example, outside of newly opened L.A. Broad Museum, many of the young people waiting in line said they got to know this museum from large numbers of pictures and videos on their friends’ social media. For them, Broad Museum is a popular social avenue, and

they do not want to miss it. “According to an on-site survey, conducted by Morey Group for the Broad, 1 in 4 visitors heard about the museum through someone else's social media feed” (Vakin, 2016, para 13).

“Most young people, Paul Willis points out, see art as something ‘special, remote and institutional, something that is set apart from their common, everyday culture’” (Willis, Jones, Joyce, & Hurd, 1990, as cited in Mason & McCarthy, 2007, p. 23). In fact, millennials have their own flavour in art, such as “a symbolic culture that finds expression in alternative images, music or fashion that is not reflected in the official art world” (2007, p. 23). At this point, social media has effectively reduced the clash between art museums and millennials’ expectations. For example, viewing a recommendation on Facebook, it would be much more convincing for millennials to visit a museum than watching a TV/radio advertisement. Furthermore, a recommendation in Facebook may reach a very large number of people. Social media can appeal to millennials through music, fashionable images, as well as, alternative media. Thus, it is an exact form of marketing that appeals to millennials.

According to the PRC 2010, American millennials were financially burdened and most of them were not married yet. As well, social media is a non-costly and highly effective way for millennials to share the happy news, communicate with others, create new relationships, introduce artifacts, record personal art journey, and to highlight events from their lives. For example, I always take selfies and photos by the background of paintings or sculptures and instantly shared them through WeChat and Facebook; I also like to make a note to record my feelings and reflections about art objects and the ambience of the gallery. Every time, I get a large amount of “likes” and active comments from my friends and family. Some of them say they would like to visit this exhibition as soon as possible; others have told me that they love this

artist as well, and that they will share my photos with others. Clough, secretary at Smithsonian Institution, suggested that “coupled with social media’s powers of connection, digital technology exponentially increases the capacity of individuals to engage with our collections and upload their own stories” (Falk, 2013, p. 2). In the context of art museums, social media may be helpful for millennials to develop interest in a non-costly way.

For all these reasons, social media is an effective marketing platform to attract art museum attendees. Gofman, Moskowitz and Mets (2011) considered whether museums’ marketing approaches can meet young people’s motivations, expectations and values, in which way museums would attract more young attendees. Social media is just the marketing approach to achieve this goal. “The applied electronic WoM thereby interpersonally and informally influences the art consumers’ decision-making and highly effects potential consumers’ attitudes and behavior” (Williams & Buttle, 2013, as cited in Enhuber, 2015, p. 132). Overall, social media has very specific appeal to millennials, and maybe art museums should take more time to consider this marketing strategy and use it.

Value Co-creation in the Arts

The interaction between art and technology may be an example of value co-creation in the arts. It is “a process through which the user becomes better in some respect or which increases the user’s well-being” (Gronroos, 2008, and Vargo, 2008, as cited in Vaux Halliday & Astafyeva, 2014, p. 123). For consumers of cultural organizations’ products, “value can be defined as the experience (emotions, feelings, memories, relationships, self-development) gained from the visit and the use of services” (Gronroos, 2008; Kolb, 2005; Kotler and Kotler, 2000; Vargo et al, 2008, as cited in Vaux Halliday & Astafyeva, 2014, p. 123). For millennial art

museum consumers, value can be defined as such experiences gained from their visits and uses of museums' services.

Next question, "Who creates this value?" Gronroos (2008), presented the two facets of value creation: "the consumer and the provider service logic" (as cited in Vaux Halliday & Astafyeva, 2014, p. 123). In later studies, Vargo and Lush stated that "these two logics can be united as the consumer and the provider as co-creators of value; the consumer is always a value creator, however, the provider is only a co-creator and acts as an additional tool to help create the value" (Vargo and Lush, 2004, as cited in Vaux Halliday & Astafyeva, 2014, p. 123). Thus, in the context of art museums, museums and visitors must cooperate to create value together. Co-creation enhances the art consumer's behaviour who now changes from "a passive recipient to an active participant" (Enhuber, 2015, p. 127). It requires art museums to alter their traditional management model, that of an ivory tower, and ultimately achieve an active engagement on the visitor's part. Museums can achieve this engagement by "the enhancement of education" (2015, p.128), and they can "now enable the public to explore collections for inspiration, learning and enjoyment" (Kirezli, 2011, p. 173).

The integration of digital technology and art can provide an opportunity for art museums to reconstruct the museums' educational role (Enhuber, 2015). Clough addressed "an entirely new use of art space through digitalization, which is educationally motivated: enabled by 3-D technology, holograms showing three-dimensional objects and artworks that allow visitors to individually and more comprehensively engage with these objects" (Clough, 2013, as cited in Enhuber, 2015, p. 129). Interactives in Gallery One at the CMA (which I describe at length in Chapter 4) and the Pen at the Cooper Hewitt Museum, show that museums are already exploring

the interaction of digital technology and art: such as the Reveal and Zoom within Gallery One which allows the participants to more deeply explore, and engage with, the artwork.

In 2014, Chang and his colleagues did a study with 135 college students from Taipei University as participants to test the educational value that the integration of digital technology can entail by comparing the visitor's experience in an art exhibition with and without the use of digital media (Chang, K., Chang, C., Hou, Sung, Chao, & Lee, 2014). The participants were divided into three groups: One group walked through the exhibition with a mobile augmented-reality (AR) guide "that enabled its users to instinctively interact with the artwork and acquire distinctive additional information, such as a synopsis and an analysis of the painting's elements (line, colour, rhythm, etc.)," as well as, an interpretation guideline that explored the painting's narrative "where art criticism to the respective painting was offered" (2014, p. 187). The second group was provided with just an audio-guide, and the third did not receive any technological support at all. This experiment measured the amount of time spent on each painting and compared the AR to audio- and non-guided groups. The researchers found that the first group spent four times longer period of time looking at each picture, compared to the other two groups. Chang et al.'s study results showed that the AR mobile guide helped visitors achieve a higher engagement and learning effectiveness with paintings and promoted their flow experience (2014). In after-experiment interviews, participants told researchers that the AR guide promoted a greater interaction with paintings. "Although this experimental environment [does] not [necessarily] reflect reality", Chang and his team's study revealed "the potential of using digitalization as a new educational means for art mediation in museums" (Enhuber, 2015, p. 129).

Thus, each museum should find the appropriate digital approaches because digitalization can reshape the role of learning at art museums, especially since self-development and new experiences are the main motives for the millennials cultural consumers (Enhuber, 2015). Moreover, Clough (2013) stated that “only curiosity-driven learning on behalf of the visitor can empower such an extensive art education (as cited in Enhuber, 2015, p. 130). But it must not be forgotten that, “implementing innovative learning strategies through digitalization is a complex and costly endeavor for art institutions and requires an individual evaluation with regards to the merits that digital projects provide for each institution” (p. 130).

Conclusion

The literature review discussed the following topics: the function of art museums; their educational role; the history of American art museums; who are millennials; museum visitors' motivations; MCCs attendance motives; declining visits of millennials to American art museums; attracting millennials to art museums; marketing art museums to millennials using social media, and value co-creation in the arts. The literature also shows that digital technology has a positive educational and socializing effect on millennials' interest in art. One example is the Cleveland Museum of Art (CMA) which has implemented the Gallery One and ArtLens application. As well, the Detroit Institute of Art (DIA) is currently testing an unprecedented virtual reality mobile device, named LUMIN, that uses Google's Tango technology to provide visitors with new in-depth ways to engage with the DIA's renowned collection. Besides digital interactive devices, the DIA also has other types interactive tools in their galleries. These interactive aids are being implemented in art museums to help visitors gain a more productive museum experience. During this research project, I compared what the DIA and the CMA are doing to enhance millennials' interest in art.

The existing research addresses potential millennial visitors' motivation, the visitors' learning experience in museums, and how to enhance millennials' interest in art museums utilizing the interaction of technology and art. However, there is still little research that focuses directly on the perspective of non-English speaking visitors; for example, how to support Mandarin speaking visitors at Western art museums, using such strategies as Mandarin speaking docents or audio guides in Mandarin. I am a Mandarin speaker, and my individual museum experience triggered this study and comprised some of the data of this study; therefore, I could not totally avoid the influence of my cultural background on the conduct of this study. Consequently, my study might be able to promote greater mutual understandings between Chinese visitors and Western museums.

Chapter Three: Methodology

Introduction

This chapter presents the research design and data analysis procedures determined to be most suitable for addressing the formulated research questions. This study used qualitative research. The purpose of this research is to understand how American art museums enhance the millennials' interest in art, especially using technology in exhibits, galleries, and activities. It is important to know both millennials and American art museums. Preliminary research was first developed in the field of art museums and the interaction of technology and art. This means reviewing literature and performing exploratory research with a qualitative approach by analyzing literature.

For the purposes of this study, the case study was employed as a collaborative and interconnected research design. Regarding specific methodologies, I chose the unobtrusive methods: (1) "analyzing pre-existing documents"; (2) in-depth interview and "autoethnography" to carry out this study (Van den Hoonaard, 2014, p. 121-145).

Research Design

"Qualitative research sets out to provide an impression: to tell what kinds of 'something' there are; to tell what it is like to be, do, or think something" (Bouma, Ling, & Wilkinson, 2009, p. 46). Qualitative research method aims to provide an answer to why things are how they are, and what is going on. It is an inductive approach to collecting data, which provides details in terms of research questions and uses inductive reasoning from specific phenomena and facts to form more general statements (Bouma, et al., 2009).

Why choose a qualitative research of this study? Qualitative research can better answer my research questions due to three reasons: (1) The nature of research questions required

access to the professional pre-existing studies and perspectives that could not be acquired through a standardized questionnaire with predetermined answer categories as used in quantitative research; (2) The nature of research questions strongly depends on the visitors' previous, current and future experiences at American art museums that could not be assessed by numbers and statistics; (3) The purpose of this study is not to measure or quantify something but to improve understanding of the relationship between art museums and millennials through obtaining information from pre-existing documents, museum scholars' studies, museum researchers' perspectives, and my visits, observation and work at art museums.

Case study. In this study, the case study was employed as a research design. The case study is a type of research design “that is concerned with the situation of a single person, group, town, institution, or nation” (Van den Hoonaard, 2014, p. 281). In other words, the case is a kind of “unit of analysis”. The case study can answer the question, “what is going on?” The Cleveland Museum of Art (CMA) and the Detroit Institute of Art (DIA) were the two cases for this study. The CMA is in Cleveland, Ohio. The DIA is in Detroit, Michigan. I intended to make comparisons between these two cases. My specific research strategies were to analyze the reports and data that the CAM and DIA researchers have provided, relevant articles, and my own experiences and observations.

a) Site One: The Cleveland Museum of Art.

The Cleveland Museum of Art (CMA) is an appropriate case to investigate and understand how cultural institutions improve millennials' interest in art through exhibitions, events and programs, especially using digital technology to enhance their museum experience and learning, because of its location, its renovation project and its visitors' research. Most importantly, the CMA values and promotes the interaction of technology and art. In American art

museums, the CMA is a pioneer that actively utilizes digital technology to enhance visitors' engagement in art.

The CMA is located in the University Circle, one of only two Cleveland neighborhoods with increasing employment and population. There are world-renowned museums, such as the Cleveland Institute of Art, the Sculpture Center, and the Museum of Contemporary Art (MOCA); prestigious universities, like the Case Western Reserve University; music institutions, like the Cleveland Orchestra; beautiful gardens, like the Cleveland Cultural Gardens; and popular public spaces, like Little Italy and Upside Town. The University Circle attracts a large number of millennials to live and enjoy spending time there. The CMA's renovation project gave birth to the museum's Atrium and Gallery One. Gallery One was first open to the public in January 21, 2013. It is a 13,000-square-foot interactive art space. It combines art, cutting-edge technology, and interpretive games to inspire visitors aged 3 to 103, both novice and seasoned, to explore the museum's permanent collection and facilitate the visitor experience through interactive games and multimedia activities. The Research Department of the CMA has been carrying out research about visitors' experiences of Gallery One and the ArtLens app, which is a kind of mobile Gallery One. CMA provides a variety of technological interactives in one big gallery to enhance visitors' interest. For these reasons, all CMA's digital tools functioned as one case for this study.

b) Site Two: The Detroit Institute of Arts.

The Detroit Institute of Arts, founded in 1885, is the biggest and the most notable American art museum close to my residence at the University of Windsor. Its geographical location makes it easy for me to reach and explore this museum. DIA's rich collections, as well as its world-wide reputation of exhibit design is another reason why I chose it as one case for my

research. “The DIA's collection is among the top six in the United States”, comprising a multicultural and multinational survey of human creativity from prehistory through the [twenty-first century] (The Detroit Institute of Art, 2017, para. 3).

The DIA is testing the LUMIN, a virtual reality mobile device. This device uses “the Google Tango technology to provide visitors with new, in-depth ways to engage with the DIA’s renowned collection” (DIA Internal Letter, 2017, para 1). The DIA is the first art museum in the world to integrate 3-D mapping and smartphone augmented reality (AR) technology into a public mobile tour. On January 20, 2017, I became the member of the first testing team of LUMIN. I got to know Ms. Andrea Montiel de Shuman, the technology specialist of the LUMIN, and I shared with her about my ideas about LUMIN. From what I saw at the DIA, I got the impression that the DIA did not put the interaction of art and technology as one of their top priorities. Before the LUMINI, there were only four digital interactive tools that I saw in the DIA: (1) A big screen in Africa gallery to show a celebration in an African village; (2) A touch table in French Life Gallery to show the process of consuming a traditional French dinner; (3) A touch screen embedded in the window display of puppets on the hall of the first floor; (4) Several information checking installations on the galleries of the second floor. These four types of interactives, which, unlike the CMA, are located at different DIA galleries, have been employed in the DIA for a long time, Thus, the DIA is a good example to explore the research questions and to compare with the CMA.

Multiple Methodologies. My own story triggered this study. I was interested in how American art museums utilize digital technology in exhibitions and programs, so I studied specific information from museums’ websites and relevant articles to explore this. As well, I wanted to better understand what millennials think about the interaction of art and technology.

As a millennial, I interviewed museum researchers of the Research and Evaluation Department of the CMA and the DIA to gain from them a better understanding of the millennials' behavior. Meanwhile, I used my individual museum experiences at the DIA and the CMA as well as my work journals at the DIA to explore the research questions.

a) Analyzing pre-existing documents.

Van den Hoonaard (2014) stated that pre-existing documents include “statistical records, survey forms, [maps], letters, autobiographies, articles in professional journals and magazines, and even works of fiction” (p. 122). “Glaser and Strauss (1967, cited in Pawluch, 2009) have referred to such documents as “voices in the library” waiting to be heard and used for our analyses” (2014, p. 122). Pre-existing documents for this study included research reports, statistic records, and professional publications from museum circles since 2010 to the present day. In this study, the Cleveland Museum of Art and the Detroit Institute of Art were the two case studies. Hence, these research reports and data that I got from the CMA and the DIA were the main body of data for me to analyze. Moreover, in this study, the analyzing pre-existing documents, as a research strategy, was used to explore all research questions.

b) In-depth Interviews.

“A qualitative research method that involves asking general questions to participate in order to obtain personal reflections and experiences regarding the phenomena of interest” (Van den Hoonaard, 2014, p. 283). This research strategy did not focus on gaining direct answers from the interviewees, but stimulating a conversation between the interviewer and interviewee. The researcher extracted information from a person or informant through this communication process. The extracted information was strongly shaped by the interviewees, who described their perspectives on the basis of their previous experience. Thus, the interview generated subjective

data influenced by the interviewees' experience. The major benefit of the in-depth interview is the ability for the interviewer to investigate and provoke the respondents for more authentic and additional information (2014).

Interview participants were recruited through purposeful sampling. They were in-house professional museum researchers from the CMA and the DIA as they were knowledgeable about museum learning and visitors' engagement. I have been a regular art museum visitor to the DIA and the CMA before conducting this study, and I consider these two museums appropriate for my case studies. I also contacted the researchers at the CMA and the DIA to ask relevant questions at the beginning of my study by email or in person. The number of interviewees were three. Each interview lasted around 30 - 45 minutes. I offered them 7 - 9 semi-structured questions and relevant information in advance by email. I interviewed Bolander in person and Ridenour by phone and record our conversations. I interviewed Morris at the DIA in person, and record the conversation. The main purpose of interviewing them was to get their perspectives about using technology to enhance millennials' engagement with art museums, as well as, exhibitions, events, and programs that are more or less attractive to millennials. Additionally, I wanted to know why the DIA and the CMA can have a steady and strong number of millennial attendance. I mainly used the in-depth interview to answer the second and third research question.

c) *Autoethnography.*

“Autoethnography is an approach to research and writing that seeks to describe and systematically analyze (graphy) personal experience (auto) in order to understand cultural experience (ethno)” (Ellis, 2004 and Holman Jones, 2005, as cited in Ellis, Adams, & Bochner, 2011, para. 1). As a method, autoethnography is a blend of the characteristics of *autobiography*

and *ethnography*. When writing an autobiographical research, Carolyn Ellis stated that “the researcher includes his or her biography as a part of what he or she is studying...and involves the researcher’s shifting back and forth between the social and cultural, and her or his inner experience” (Van den Hoonaard, 2014, p. 144). This means that the researcher selectively presents his or her previous individual stories, experiences, reflections and analyses. Moreover, Ellis stated telling her or his story in the first person bridges the real experience and ‘the sociology of emotions’ and avoids “WE study THEM”; Indeed, autoethnography is ‘WE study US” (p. 144). Thus, researchers do not need to assume that there is no personal influence in the process of study. Ellis, Adams, and Bochner (2010) claimed that “autoethnography is one of the approaches that acknowledges and accommodates subjectivity, emotionality, and the researcher's influence on research, rather than hiding from these matters or assuming they don't exist” (para. 3). Autoethnography allows me to explore my own museum visits and experiences; to examine the original motivation for me to conduct this study; and to use my reflections as a form of data in my research.

Ethnography and autobiography run parallel to each other in autoethnography. Maso (2001) stated that, “When researchers do ethnography, they study a culture's relational practices, common values and beliefs, and shared experiences for the purpose of helping insiders (cultural members) and outsiders (cultural strangers) better understand the culture” (as cited in Ellis, Adams, & Bochner, 2011, para. 6). Researchers are the participant observers in cultural phenomena and create field notes to record what they observe (Geertz, 1973; Goodall, 2001, as cited in Ellis, Adams, & Bochner, 2011). For me, as a gallery service volunteer at the DIA, it offered me the opportunity to explore the DIA collections and to communicate directly with the docents, museum researchers, and educators. My coworkers were always willing to answer my

questions and offer help. I have learned a lot from them, especially Kenneth Morris, the director of the Research Department of the DIA, who has offered me many suggestions, articles and data. While working volunteer, I jotted down details about my observations about the technological installations, its users and the millennial visitors' behaviours. After getting home, I sorted these jottings that became my field notes. I used them as the data for my ethnographical research.

To return to autoethnography, it is “both process and product” (Ellis, Adams, & Bochner, 2011, para. 1). Autoethnography is not only utilized to answer a particular research question, but infuses the whole process of this study. The data of my autoethnographical research would be the total of my previous and current museum experiences, my DIA work observations and reflections. My first visit to a Western art museum was in Paris 2009. Starting from then, I have been visiting art museums in France, Italy, Spain, Portugal, The Netherlands, Germany, Belgium, New Zealand, the USA, and Canada. I took notes while I visited all those museums. I sorted and collected these notes, which I also used in my thesis.

Data Analysis

“Analysis of data is a process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making. Data analysis is a process within which several phases can be distinguished” (Boundless Sociology, 2017, para 1). Qualitative research does not aim at pursuing a specific and clear conclusion. Its goal is to answer, “what is going on” and “how does it look” in a specific situation. In this study, except for the data from the pre-existing documents, other data came from interviews and my own experience. Obviously, these data could not avoid subjective influences. Thus, as the researcher of this study, I had to remind myself to try to take a neutral, impersonal, and objective stance in the process of the data analysis.

Bouma, Ling, and Wilkinson (2009) stated that when analyzing data in qualitative research, it is important that the researcher be close to the situation so that the researcher can be sensitive to data. Regarding this, I had a natural advantage in respect to this qualitative research because I had been working in the DIA since I began to do this research.

Analyzing data from pre-existing documents. In this study, the research reports from the CMA and the DIA have been analyzed and contextualized with prior research. These data offered a wide range of themes, but I could not give equal attention to all themes. I created a protocol: to analyze these data that closely addressed the research questions; and to not cover the themes that are not relevant to the research questions. According to Bouma, Ling, and Wilkinson (2009), the literature review and data analysis are symbiotic. I constantly went back to the literature review when analyzing the data to better extract the ideas from the research reports of the CMA and the DIA. Likewise, reviewing the literature review offered me new insights when analyzing the reports from the CMA and the DIA.

Analyzing data from in-depth interviews. In this study transcripts from sound recordings and my notes were the data of the in-depth interviews. I re-read the interview transcripts and reviewed the sound recordings. I then had the interviewees check the data to help me improve their accuracy. As well, I made notes and recorded my findings from these data. I did analyses one at the time, then put the data aside for a while. Because the answers from the interviews included information that I have never known before, I needed time to review some of the literature to support my analyses before I returned to the data. Then I must ensure that all data that I used contribute to answering the research questions. Because I assumed that many new ideas would arise from the interviews, I very carefully transcribed the opinions of the interviewees and assured that I kept their ideas exactly as they were expressed in the interview.

Analyzing data from the autoethnography. In this study, my personal museum experience was used as the data of the autoethnography. These data included my visits to exhibits and galleries, participation in museum activities and programs, attending curators' lectures, my participation in the DIA's orientation training and on-going training, work journals, observations, participating in DIA's employee meetings, and communications with coworkers. I also included notes and photos that I took during my visits to art museums in different countries and I carefully sorted out the information to identify patterns and themes and to connect these themes with analyses from my other methods.

My work journals were the core data of the autoethnography for this study. For most of my work shifts at the DIA, I jotted down the details of what I did and observed. For each DIA work shift, I was provided with an information letter about the daily events, programs and exhibits. I also took notes when I participated in the DIA's activities, such as the educational activity that included testing the functions of the LUMNI. My work journals were the main data that I analyzed in this part. I focused on millennial visitors as well as the interaction of technology and art.

Chapter Four: Findings

The current study explores how millennials who visit American art museums experience and learn about art through technology and investigates how technological approaches can satisfy millennials' interests, desires and identities to help them to achieve a more engaging and productive museum experience. My case study is based on two museums: the CMA and the DIA. The data were consisted of analyzing pre-existing documents, interviews, and personal reflections. Pre-existing documents include studies mainly conducted by the CMA and the DIA but also some reports from other museums. The interviews were conducted with two in-house museum researchers from the CMA and one in-house museum researcher from the DIA. I also collected reflections from my museum experiences and work journals at the DIA.

In this chapter, I illustrate three main findings, each one corresponding to one research question. First, according to pre-existing studies of current American museums, this study analyzes the overall present-day status of technology use in American art museums. Then, based on reports from the CMA and the DIA and my reflections, I analyze how these two art museums are using technological strategies to enhance millennial audiences' learning and experience. In the last section, primarily according to perspectives of interviewees, I compare the CMA and the DIA and try to uncover how they have achieved a high attendance rate among millennials within the past few years while major American art museums are facing the decline of millennial attendees.

[What are American museums doing to enhance millennials' interest in art?] Findings Based on Analysis of Pre-existing Documents

A fundamental mission of any museum is to engage and educate their visitors about their collections. For visitors, especially first-time visitors, art objects can be challenging,

intimidating, and difficult to understand. For those who lack knowledge of art history and the artist's achievements, it is not easy to engage in art museums and learn productively. For example, I often observe attendees quickly passing through the exhibits without even looking at anything specific. In addition, even though I am a regular visitor and have much museum visiting experience, I am still struggling with how to move beyond mere observation to learn from art works and engage myself deeply in art museums' collections.

Traditionally, museums provide small panels containing text-based information located close to displays as well as, audio/video guides and docent tours. In the case of small art museums, panels are often the only educational resource available to visitors, perhaps because of budget constraints. Furthermore, most such panels are written only in English, which might be an obstacle to understanding for millennials whose first language is not English. Even at some top-rated American museums, the audio guides only offer information in English. I love to use the audio guide but I really need the audio guide in Mandarin. Besides, these tools currently offer only basic information, and visitors cannot directly share their reflections through social media. Thus, practically, traditional strategies have not satisfied the needs of present-day cultural consumers.

A rise in the use of digital technology at American art museums. Whiteside, Atkinson, Stump, Tamir, and Lawrence (2014) state that "in the last seven years, there has been being a rise in the use of interactive mobile applications that expand the variety and the amount of didactic information supplied to visitors" (p. 229). Ten years ago, few art museums used technology to enhance visitors' experience because people were not as familiar with digital technology, and smart phones and their related applications were not nearly as prevalent.

However, with the rapidly increasing use of smartphones and tablets, more and more art museums are using technological strategies to help attendees to engage with collections.

In April 2015, the Association of Art Museums Directors (AAMD) published a publication in their “Next Practices” series titled, *Next Practices Digital and Technology*, which includes [submissions related to 37 American art museums] from [AAMD’s] members, exploring a wide range of ways to apply digital technology—from social media and mobile apps, to in-gallery interpretation of works and enhancing visitors’ experiences, to improving public access to data as well as behind-the-scenes collections management. (p. 2)

This publication explores how present-day American art museums are using technology in order to advance museum education and audience engagement by using iPad kiosks, touch screens, 3D printers, mobile applications, social media, digital visitor services, and interactive interpretations (Association of Art Museums Directors, 2015). Though not each American art museum has resources to implement modern technology, or believes it can enhance visitors’ experience and learning, more and more American art museums use new technology as interactive interpretations to help visitors. Employing these strategies can increase attendance among millennials, as noted by Millennial Cultural Consumers’ (MCCs), who argue that there are four attendance motivations for millennials: 1) social interaction; 2) entertainment; 3) self-development; 4) prestige (as cited in, Vaux Halliday & Astafyeva, 2014, p. 126). Based on this analysis, five of the 37 technological strategies prescribed by *Next Practices in Digital and Technology* can be particularly effective for millennial visitors: 1) Key to the Collection App; 2) Hands On!; 3) The Pen; 4) Flipped Learning for Educators, and 5) #BreakForArt.

Keys to the Collection App. The Barnes Foundation in Philadelphia offers *Keys to the Collection App* that provides “a series of mini games that help [millennials] connect to the collection with thrilling new technology” (AAMD, 2015, p. 7, see Figure 2). It allows visitors to explore stories and new ideas about art objects and to develop creative thinking by using 3D immersive graphics, touchscreen capabilities, and multiple-layered games content. Player can gain points to the final big reward, which encourage them to keep exploring galleries one by one. This app is a revolutionary way for young people and their families to develop their imaginations with art objects and inspire them to make their lives and world around them connect with art.



Figure 2 *Keys to the Collection App* (AAMD, 2015)

Hands On! At the Art Institute of Chicago (AIC), *Hands on* is an innovative multisensory tour designed for people with Alzheimer and low vision. Museum staff “selected objects from the collection” and had 3D-models of the items printed at a 1:1 scale “for participants to hold and touch”, in included musical accompaniment to make the experience more immersive (AAMD, 2015, p. 6). Though intended to help people with Alzheimer and low vision, this tour increased the curiosity of general attendees, especially young adults and children, as this sensory experience proved more engaging, thereby compelling observers to become participants.

The Pen. At the Cooper Hewitt, Smithsonian Design Museum in New York, this pen is not a real pen. It is “a device given to visitors that allows them to save and collect anything they see (via NFC-enabled wall labels) and [transfer to] the interactive tables” (AAMD,



Figure 3 *the Pen* (Meyer, 2015)

2015, p. 15, see Figure 3). This innovative tool can transform the audiences' reflections while cooperating with an in-house web API, multi-touch tables, and a room-sized projection space. It allows a historical house virtual tour, and it is also a gestural navigator which is a new strategy for orient visitors. So, it is a complex of cutting-edge technological interactives, which is attractive to young adults, especially to the tech savvy. I believe that the Pen can raise the visitors' interest in exploring art objects and can help users get more information about collections within the same visiting time.

Flipped Learning for Educators. It started in 2015 when the Metropolitan Museum of Art (Met) in New York began the pilot *Flipped Learning for Educators* and moved museum curators' and educators' video lectures and demonstrations to make them available through websites such as Khan Academy (see Figure 4). This approach allows teachers and students from elementary schools to college to view as many times as needed the information about the collections and its stories. Additionally, viewers can get access to feedback and support from peers and educators. Since millennials use the internet regularly, it is a productive



way for them to explore art objects, enhance their understanding of art, and share new experiences with friends by social networking. *Flipped Learning for Educators* not only can enhance educators' knowledge and skills, but also enhance millennial visitors' interest in art. Moreover, the Met has an innovative museum tour entitled "Museum Hack." Museum Hack has three key features: 1) tour guides who are mostly young educators, actors or museum lovers; 2) the use of games and not lectures about art history. Since millennials prefer to be entertained before they can be educated: they can imitate the gestures from paintings or sculptures and take

selfies and share photos on social media; 3) in this case, storytelling is more important than art history.

#BreakForArt. It started in July 2013 when the Phillips Collection in Washington, DC, launched an activity that “engages virtual visitors in an inquiry-based Twitter chat entitled ‘BreakForArt’” (AAMD, 2015, p. 38, see Figure 5).

Museum educators lead Twitter followers in a virtual discussion about one work of art in the permanent collection on the first Monday of each month. Phillips educators focus on inquiry based teaching techniques and a

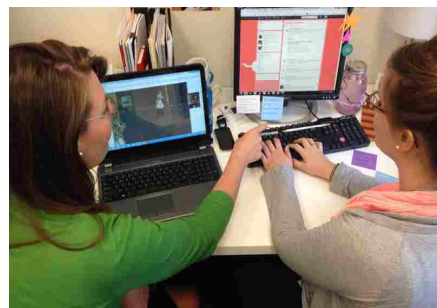


Figure 5 A #BreakForArt chat (AAMD, 2015, p. 38)

close look at content and supplemental information that encourages conversation. This is a well-organized social media event for young museum lovers and potential millennials’ visitors.

[How Are American Art Museums Using Interactive Displays and Digital Technology?]

How Are the Two Museums Implementing Technology? Findings Based on Analyzing Pre-Existing Documents, Interviews, and Autoethnography

Technology can enhance the experience of millennial audiences. Technology can enhance some millennial visitors’ learning and engagement, but not all. According to Falk and Dierking's work or Falk's Identity and the Museum Visit Experience (2009), different visitors have different needs. As Bolander, a millennial, stated to me,

When I go to museums, I tend to either a) go to relax and refresh or b) learn about their systems and how this could advance my professional knowledge. I'm going to approach my visit differently depending on whether I want to relax, in which case I will probably be quiet and use no technology, or whether I want to actively learn, in which case I might

be taking pictures and using apps. (personal communication with Bolander, November 2016).

Millennial visitors express various reflections and behaviors when it comes to using digital interactive devices, museum apps, and other online resources at art museums. Some millennial visitors are willing to allow technology to entertain them and help them learn more from art works and enhance their experience at museums. In general, they are regular visitors, tech-savvy and well-educated; often they are married and bring their children or they have companions (Bolander - Gallery One, 2016). However, although millennials are willing to use digital interactive tools, they need to be able to easily access the technological devices and apps when they want to use them, and they dislike downloading apps into their own devices (Bolander & Ridenour, 2016; Bolander - ArtLens, 2016; my observation at the CAM and the DIA, 2015).

There are millennial visitors who prefer to keep away from technology and its impact on their museum experience; they do not like technology to interrupt them while they are enjoying art works and the museum's artistic atmosphere; they just want to have a relaxed leisure time at the museum. For these museumgoers, they feel that "the constant distractions associated with most modern technological devices [reduces] this reflective experience" (Nolan, 2016, para. 3). I encountered some of them during my volunteering at the DIA. For instance, on the afternoon of May 5, 2016, I saw a couple in their thirties who were wandering in the French Life Gallery on the third floor. They were confused about how to use the Dining Table Video (DTV) that is "a projection onto a tabletop in the gallery called Splendor by the Hour, Fashionable Living, Evening Dining", which shows "the objects being used in an aristocratic banquet in the 1700s" (Serrell & Adams, 2012, p. 71). Although I showed them how to turn on this video, they just quietly stood aside at the DTV and did not want to try it themselves. They left this gallery after

watching the DTV for around three minutes. This video table is the most popular digital interactive interpretation at the DIA; however, apparently, it did not appeal to them. They appeared to prefer to be museum patrons who enjoyed art objects quietly following their own pace rather than consumers of the interaction of art and technology. Such millennial visitors do exist in my observation, although they do not represent the majority of the DIA's millennial attendees.

As a millennial and art museum lover, I usually want a happy museum experience. What do I mean by “*happy*”? First of all, and most importantly, if I can acquire new information about art works or the artists' achievements, that makes me happy. Of course, I also enjoy immersing myself in the artistic and stylish space to refresh my mind. Thus, learning professional knowledge is the core for me. This learning is an informal education in interdisciplinary studies and not only art. Furthermore, I can freely choose what I want to learn according to my interests and desires and share my reflections with other visitors, peers, and museum staff. This learning process provides me with a unique opportunity to learn. This is the core reason why I am so obsessed with visiting art museums. Consequently, as a millennial visitor, I would be willing to use technology to enhance my museum experience if its content can support my learning and make a more enjoyable leisure for me and my friends.

The Cleveland Museum of Art. The CMA is in the University Circle neighborhood of Cleveland, in Ohio, a young and vibrant neighborhood. The CMA was established in 1913 and its museum mission is “for the benefit of all the people forever” (J. H. Wade II, as cited in the Cleveland Museum of Art - Mission, 2017, para. 1). It is known as “the world's most distinguished comprehensive art museum and one of northeastern Ohio's principal civic and cultural institutions” (the Cleveland Museum of Art - Mission, 2017, para. 2). The CMA offers

free admission to all and it also offers free innovative workshops, talks, activities and events. Millennials are more price-conscious than their parents or grandparents, so at this point, free admission can have an active impact on increasing their visiting potential (Bolander & Ridenour, 2016; Drake, 2014).

In recent years, especially after opening Gallery One, the CMA has become a pioneer in American museum circles in the use of new technology that enhances its visitors' learning and engagement in art. ArtLens is CMA's application, a kind of mobile Gallery One. The Gallery One and ArtLens has been used to empower its visitors with technology and to allow them a personalized exploration of its collections through the physical connection allowed by digital interactive devices. I will illustrate and analyze what the CMA is doing to enhance millennials' engagement with art objects through the interaction of art and technology, mainly using the research reports from the Research and Evaluation Departments of the CMA, and my observations and reflections. The research reports include the following:

a) *Gallery One Main Space User Experience Research Summary* (Bolander - Gallery One, 2016) - an overall summary of key findings and a two-year evaluation of Gallery One from 2013 to 2015;

b) *ArtLens User Experience Research Summary* (Bolander - ArtLens, 2016) - an overall summary of key findings about ArtLens from data throughout 2013 to 2015;

c) *Young Professional & CMA: Exploring Awareness, Motivations, and Perceptions* (Bolander & Ridenour, 2016) - a study about the CMA's visitors aged between 25 and 40 who attended the CMA between October 2015 and October 2016. Bolander and Ridenour collected data using surveys, interviews, focus groups, and observations;

d) *Transforming the Art Museum Experience: Gallery One* (Alexander, Barton, & Goeser 2013) - a study that analyzes how Gallery One and ArtLens use interpretive technology such as mobile applications and interpretive interactive installations to engage visitors actively in new kinds of experiences with works of art. One result of this study is “[Gallery One] is a highly innovative and robust blend of art, technology, design, and a unique user experience which emerged through the unprecedented collaboration of staff across the museum and with award-winning outside consultants” (para. 1);

e) *Gallery One, the First Year: Sustainability, Evaluation Process, and a New Smart Phone App* (Alexander, 2014) - an evaluative study of the inaugural year of Gallery One. This study addressed three questions: “1) Is the concept behind Gallery One working? 2) How can the museum sustain Gallery One? 3) What are the next steps?” (para. 1).

A. Gallery One.

Gallery One first opened to the public on January 21, 2013 (Alexander, Barton, & Goeser, 2013, see Figure 6). It is a 13,000-square-foot interactive art space which mixes art, cutting-edge technology (such as Reveal and Zoom) to inspire visitors to explore the

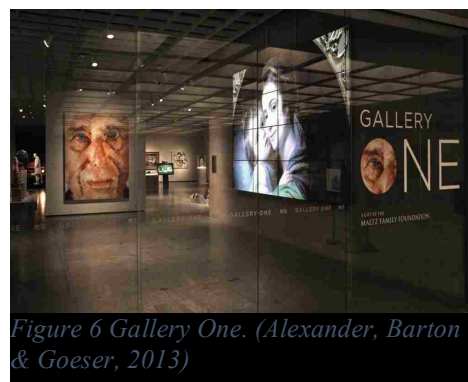


Figure 6 Gallery One. (Alexander, Barton & Goeser, 2013)

museum’s permanent collection and to facilitate their learning and engagement through 16 interpretive interactive games centered on the following themes: composition, symbols, gestures and emotion, and purpose. Bolander (2016) states that “most [Gallery One] users tend to learn more about the art objects on display [and] play a game” (Bolander - Gallery One, 2016, para. 8).

As a revolutionary space, Gallery One includes two rooms: the first one, located just to the left of the main museum entrance, features six interactive Lens and a Studio Play. Lens are

organized by various themes, such as 1930s Lens, Globalism Lens, and Sculpture Lens. Different Lens attract participants differently. “1930 Lens is the most frequently used, likely due to its placement being the first lens you encounter when following a counter-clockwise path”, however, “1930 Lens’s stay time is the lowest of the Lens”; Sculpture Lens has a very high stay time for most visitors, especially “Strike a Pose”, which is the same as my



Figure 7 Strike a Pose (CMA – Gallery One, 2017)

observation (Bolander - Gallery One, 2016 para. 9, see Figure 7). The content of Strike a Pose is unique and attractive. The Studio Play is a space designed for the young “setting up a lifetime connection to the museum through joyful, creative exploration of the collection” (The Cleveland Museum of Art – Studio Play, para. 1). It features various games like the Pottery Wheel, the Reveal and Zoom, the Line and Shape, and the Matching Game. Overall, in my view, Lens and Studio Play offer visitors many physical elements to make connections with art, which is really unique and engaging. In conclusion, these technological approaches transform audiences from observers into participants.

The second room features the largest multi-touch screen in the United States; it is called Collection Wall and displays images of over 35,000 objects from the museum’s world-renowned permanent collection (see Figure 8). The screen is refreshed every 40 seconds and



Figure 8 Collection Wall (CMA – Gallery One, 2017)

moves from a wide-ranging view of 4,200 to 4,500 artworks to a group of artworks curated by the Cleveland Museum of Art staff, which highlights various themes from “Love and Lust” to “Portraiture.” Every 10 minutes the content management system updates the wall with high

resolution images of artworks, and visitors can select their favorite artworks on the Wall to explore more details (Cleveland Museum of Art - Collection Wall, 2017). I remarked that the CMA spent a big amount of their resources and staff to develop and maintain this huge multi-media touch screen. Nonetheless, I did not see a large number of people using this device during my visits. So, I wanted to know why is that.

The gallery was named Gallery One because “it was designed to act as a starting point for museum visitor[s]” (Loesser, 2016, p. 18). Based on data from general CMA visitors, who are a high-repeat and educated audience, Bolander states that “visitors tend to go to [Gallery One] when they are new to [the CMA] or when they are bringing someone else who is new to the [CMA]” (Bolander - Gallery One, 2016, para. 4). So, visiting Gallery One is a good way to reduce the sense of exclusion of those who are new to the CMA. I understand that feeling very well because the first visit to a huge museum is always not easy for new audiences. Furthermore, regarding MCCs Attendance Motivations, Vaux Halliday and Astafyeva indicates that “social interaction” can be identified “as a central driver, and includes the feeling of belonging, desire for recognition and social interaction” (Vaux Halliday & Astafyeva, 2014 p. 126). For present-day MCCs, this is a top priority (2014). I believe that Gallery One can have an active influence and encourage first-time millennial visitors to visit the CMA and enhance their engagement with CMA’s collections. However, I want to know how exploring Gallery One impacts on new millennials visitors specifically.

Gallery One is originally designed to fit all people not just new visitors or one demographic group, because the CMA’s mission is: “For the benefit of all people.” In fact, I saw people of various age groups, and with various interests and cultural background at Gallery One. I believe that it is probably because Gallery One’s games have various contents, features, and

technologies. Furthermore, I found that most of Gallery One's users were young adults and children with their parents or grandparents. Bolander also stated that "a multigenerational group tend to visit Gallery One" (Bolander - Gallery One, 2016, para. 4). I wanted to know if Gallery One has a wide demographic appeal or not. Bolander told me that, "We found that most of Gallery One's users are millennials" (E. Bolander, personal communication, May 31, 2017). Hence, in practice, Gallery One has demographic appeal to millennials.

The purpose of Gallery One is to empower visitors and allow "visitors to take away an experience rather than having a specific content delivered to them" (Alexander, 2014, para. 8). Explicitly, at Gallery One, the CMA wants visitors to "1) have fun with art, 2) use the interactive games and interpretations as the spark for understanding and [for having] social experiences [of] art, and 3) find transformative moments of discovery that make art relevant for them today" (para. 9). These goals match the MCCs' attendance motivation: 1) social interaction, 2) entertainment and experience, and 3) personal development. So, Gallery One does have a positive impact on inspiring millennials to visit the CMA and join CMA's events, talks, workshops.

In addition, I observed that most of the participants at Gallery One were young adults with companions, their children or friends, and that very few visitors explored it alone as I did. As a researcher, I was mainly focused on observing audience reactions, rather than being engaged with digital devices. I also wondered whether millennials with children would like to visit museums more than those without children. Bolander confirmed my thoughts, saying: "millennials with children at home seem to more likely go to our museums because they use them as exposure for their child, not necessarily that much for themselves." As well she added, "we really found that Gallery One's visitors come from the motivated generational groups who

have children. Whether children with parents or with their grandparents” (E. Bolander, personal communication, May 31, 2017). Furthermore, Bolander and Ridenour (2016) stated that infrequent visitors, aged between 25 and 40, who visit the museum less than two times per year, need more attractive and social interactive experiences. I feel that Gallery One’s interactive games and Collection Wall can attract infrequent millennial visitors’ attention and help them find new paths to achieve customized and interactive learning and engagement in art museums.

The following is an analysis of four interactive technological approaches featured in Gallery One:

1) *Sculpture Lens*

Gallery One has 6 interactive lenses including the Sculpture Lens (How Do Our Bodies Inspire Art?), the Lion lens, the Epic Stories lens, the Globalism Lens, the Thirties’ Lens, and the Painting Lens. “Each [is] composed of a large-format interactive 46-inch touch screen that interprets clusters of related artworks”



Figure 8 Sculpture Lens (CMA – Gallery One, 2017)

(Alexander et al., 2013, para 29, see Figure 8 & 9). One of the first art installations that visitors



Figure 9 Sculpture Lens (CMA – Gallery One, 2017)

encounter is entitled, “How Do Our Bodies Inspire Art? It offers a broad look at CMA’s encyclopedic collections of sculpture, including an ancient Roman marble athlete, a wooden African sculpture, and a bronze head by Rodin” (2013, para 5). This

interactive game inspires visitors to connect with the collection and see themselves in the art on view, and it boosts the visitors’ curiosity and understanding of sculptures.

I love sculptures and always take a long time to stand in front of them to experience them; for example, I spent a whole morning enjoying the huge sculptures in the Sculpture Square when I visited Florence. But I admit that it is not easy for me to fully appreciate these unique art objects given my limited knowledge of art.

Museums do not always provide a detailed description to explain origins of their artifacts. Traditionally, the museum just displays the name of the artist, the artist's nationality, dates of birth and death, and the year the artwork was made. Some museums such as the Metropolitan Museum of Art (Met) in New York provide informative panels about the sculptures for visitors. While reading the Met's sculpture panels, I could not understand them without looking up new words many times in my electronic dictionary. English is not my first language and it is a big barrier for me when I explore art works at American art museums. However, *How Do Our Bodies Inspire Art?* offers many short summaries and photos of sculptures instead of big panels using jargon. It is more practical and helpful for me to explore details of sculptures than reading the jargon next to them, and it makes it easier for me to establish connections with the sculptures. I enjoyed using this interactive tool. Furthermore, this lens offers an attractive opportunity for millennials to enjoy art works with friends and family, which effectively enhances their engagement in visiting the CMA and greatly increases their revisit potential (Alexander, 2014; Bolander & Ridenour, 2016; my observation).

2) *Globalism Lens*

The Globalism Lens is my favorite. When I visited Gallery One, I spent a lot of time on this lens and learned a lot from its content (see Figure 10).



Figure 10 *Globalism Lens* (photo by Fang)

Employing the Globalism Lens, I investigated artworks based on the comparison of Western and

Eastern cultures using an introductory animation. This interactive game attracts visitors' attention to "specific examples of cultural cross-pollination" (Alexander et al., 2013, para 38). And the screen inspires visitors to explore works interactively. I am from the East and staying in the West. I have strong interest in investigating the Western and Eastern cultures and arts.

3) *Collection Wall*

This 40-foot Collection Wall, the largest multi-touch screen in the United States, allows one to browse through the entire collection and to create your own museum tour (Gallery One and ArtLens flyer from CMA, see Figure 11). In *Gallery One, the First Year: Sustainability, Evaluation Process, and a New Smart Phone App* (2014), Alexandre clearly emphasizes that the Collection Wall was designed to ask visitors "to browse rather than search: to find artworks



Figure 11 Collection Wall. (Alexander, Barton & Goeser, 2013)

they like visually, and to discover connections to related works by collection, material, or time period." Designers of Gallery One know the core mission of museums is education; however, they do not want to directly teach their visitors something; they prefer to use transformative approaches. For example, they choose to trigger visitors' interest, curiosity, and learning needs as the beginning of CMA's museum education.

As well, the Collection Wall allows visitors "to shape their own tours of the museum and to discover the full breadth of the collections on view throughout the museum's galleries" (Cuscott, 2013, para 3). There visitors will have an opportunity to dock their iPads or borrow them from the museum. Visitors who use the Collection Wall to browse the collection can save their favorites to their iPads (Bernstein, 2013). These saved objects can be combined to create a customized tour so that visitors can follow their own routines when viewing the museum's

permanent collections (Cuscott, 2013). Franklin, the former director of the Cleveland Museum of Art, states that, “It’s very democratic. You can create a tour, and give it a funny name, and other people will follow it through the museum,” as well as museumgoers give their tours names like “My [New Faves] by Linda” and “Preston Loves Shadows” (Bernstein, 2013, para. 5).

I am a millennial, but not tech savvy; at times, high-tech devices make me nervous. I do need support to learn how exactly to use the huge screen to explore the Collection Wall. The first time I stood in front of the Collection Wall, I did not know where I should first touch it. However, I got lucky. While I was participating in the seminar on November 18- 19 at CMA, Stephanie Foster, a Interpretation Specialist, taught me how to explore the Collection Wall. Through Foster’s demonstration, I learned how to create my own tour according to my preferences and I shared my own tour route with the Wall. It is a new, attractive and innovative way to learn about art objects. It was a very fun experience for me, and I really recommend this amazing Wall to my friends. Alexander believes that the Collection Wall can encourage potential visitors to walk into the museum and inspire visitors return to the museum (Alexander, 2014). I agree with her, based on my observation: especially young adults browsed works individually or communally with the Wall for around ten minutes, happily shared their experiences with each other, and delivered their new views on the Wall. I believe participants might make new friends through exploring the Wall. It seemed as if this process helped reduced millennials’ feelings of isolation within art museums and made them feel comfortable with art. However, I think that the CMA needs to offer more help for visitors in using this cutting-edge technological tool. I guess this is probably the reason that I did not see a big crowd of users in front of the Collection Wall.

4) Reveal and Zoom

Reveal and Zoom is a technological installation at the Studio Play, which offers the audience two methods of exploring the collection: Reveal encourages “visitors to consider composition first before details come into focus, while Zoom invites visitors to investigate details closely” (The Cleveland Museum of Art - Reveal and Zoom, para. 1, see Figure 11). It alternates on a 4K interactive video wall that tracks the visitor’s movements as a tool to explore the museum’s collection, including masterpieces by Pablo Picasso, Auguste Rodin, and Viktor Schreckengost. With Zoom, I remember that a larger-than-

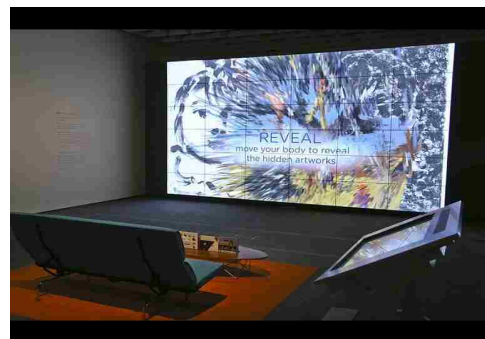


Figure 11 Reveal & Zoom (CMA – Gallery One, 2017)

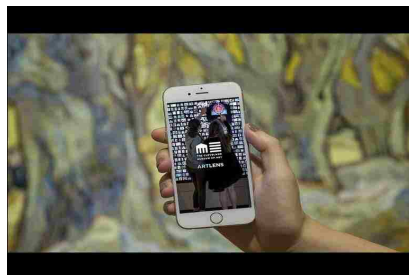
life-size blurry image appeared on the video wall. By moving my arms or legs, my sweeping gestures brought about subtle changes to the image, while smaller, focused movements extracted finer details. Also, I could choose which art objects I wanted to explore by myself, creating a visitor-led experience for me. In my observation, the Reveal and Zoom attracted a large number of young adults and made them excited to explore collections through physical activities and interactive technological devices. It opened a new pathway for participants to learn from art objects. In addition, this game can meet millennials’ expectations because I not only heard many millennials say that they wanted to explore details of paintings and sculptures, but also that they could not find the tools to do this in regular galleries.

Gallery One allows visitors to explore the museum’s collections through physical elements and interactive approaches that combine technology with a well-researched understanding of the learning needs of young visitors. Throughout Gallery One, the combination of original art objects and digital interactive interpretations engages visitors in personalized and customized ways, putting curiosity, imagination and creativity at the heart of their museum

experience. In Cuscott’s words, “Innovative user-interface design and cutting-edge hardware developed exclusively for Gallery One break new ground in art museum interpretation, design and technology” (2013, para 2). In addition, Gallery One provides cross-generational opportunities for families to begin the exploration of permanent collection artworks in a comfortable, safe, and deeply engaging space.

B) ArtLens Application.

I have an intimate relationship with my iPhone. I sleep with it, eat with it, and carry it in my pocket all the time. I am not alone in this; millennials love phones. We love them for good reason: “They tell the weather, the time of day and the steps we’ve taken [;] they find us dates, entertain us with music and connect us to friends and family [;] they answer our questions and quell feelings of loneliness and anxiety” (Alderman, 2017, para. 2, see Figure 12 & 13).



*Figure 12 ArtLens Application
(CMA- ArtLens, 2017)*

According to *Deloitte’s 2016 Global Mobile Consumer Survey: US Edition* (2016), in the morning “more than 40 percent of [participants] check their phones within five minutes of waking up. As a first thing, [they] check [their] IM or text messages (35 percent), followed by emails (22 percent)”; during the daytime, they “look at their phones approximately 47 times and



*Figure 13 ArtLens Application
(CMA - ArtLens, 2017)*

that number rises to 82 for 18- to 24-year-olds”; once the day is over, “over 30 percent of [participants] check their devices five minutes before going to sleep, and about 50 percent in the middle of the night” (Deloitte, 2016, p. 4). As well, cell phone use is on the rise among 25 to 34-year-olds, who “are demonstrating higher levels of mobile device interest and use” (p.18). Clearly, the phone is a

primary medium for millennials to get information, entertain themselves and communicate with others. It is a fact that museum management cannot avoid. Meanwhile, apps and social media also provide new opportunities and stages for museum educators, curators, and event and workshop designers to offer better services for visitors. As a result, we are seeing that more and more American art museums develop their own apps to help their visitors engage with art and post information and share visitors' experiences through social media.

ArtLens is the CMA art app. Before, during, or after visiting, audiences can enjoy over 19 hours of FREE audio and video content about works throughout the galleries. Also, the ArtLens is a guide that aims to “maximize general CMA visitors' experience at the museum” (Bolander - ArtLens, 2016, para. 3). The app has five main features: “Near You Now,” “Tours,” “Today,” “Scanning,” and “Favorites” (indicated by a heart icon). The content of these main features is layered so users can choose what information they look for guided by their own sense of curiosity and interests. In addition, ArtLens discovers new ways of looking at and interpreting art objects for users. For instance, wayfinding, information seeking, and scanning are popular functions for users. Information-seekers tend to browse on their own or enjoy interesting objects as they come across them in the galleries. “Scanning is generally seen as a fun and enjoyable experience by those who use it” (para. 13, see Figure 14). For on-site users, I believe that wayfinding is a preferred and highly efficient method for looking for a specific art work or gallery because “ArtLens can sense a visitor's location in the museum” (Alexander et al., 2013, para 49).

ArtLens is a powerful educational tool for millennial users. Millennial visitors told me that they like to get answers to their questions as soon as possible while browsing art objects based on their own tastes, interests, and identities. As well, I was told that they do not like to ask

museum staff for information. Regarding this, the ArtLens can satisfy them because wayfinding can locate where they are and offer digital stories for users about the surrounding artworks, which can help them get better understand artwork through augmented reality and guiding users with interactive real-time maps (The Cleveland Museum of Art - ArtLens, 2017). Bolander also notes that “if they are the type of visitor who wants to learn something from their visit, they will be most satisfied by ArtLens



Figure 14 ArtLens Application (CMA - ArtLens, 2017)

when it provides information that can satisfy this need” (Bolander - ArtLens, 2016, para. 5). Moreover, ArtLens offers millennial users a mobile tool to achieve a personalized and customized experience and learn while browsing, especially for information-seekers who “tend to browse on their own, looking up interesting objects as they come across them in the galleries; they may also use wayfinding to locate visitor amenities or specific objects” (Bolander, 2016, para. 9). As well, users can get mentoring from professionals, such as information, videos, and stories about art objects by the curators, educators and other staff. In addition, other visitors can be found on ArtLens. Users obtain a mobile value-add to their general museum experience by ArtLens, which they cannot get elsewhere.

The contents of ArtLens can attract millennial visitors who want to use the technological approach; however, not all millennials are willing to use ArtLens. According to the *ArtLens User Experience Research Summary* (2016), Bolander reveals that the regular CMA visitors are the main ArtLens consumers, especially those who are “tech savvy, highly educated, and have high expectations for the apps that they maintain on their phones and tablets” (para. 4). Certainly, it also does not mean that audiences who are not regular visitors, tech savvy and highly educated

do not want to use ArtLens. Because in general, infrequent visitors or non-traditional visitors “require different needs or even higher level of guidance and even clearer language and explanations than those who are more experienced in museum behavior and codes” (Bolander - ArtLens, 2016, para. 2). Furthermore, ArtLens can attract off-site millennial users to visit the CMA because its off-site users are most likely potential visitors. Bolander reveal that before visiting the CMA off-site users like to use “Search”: browsing collections and “be engaged in pre-visit planning” on ArtLens; after visiting, they love to share their memories or reflections using the app to introduce the museum and its collection (para. 18). “Search” is the preferred method for off-site users also because it is easier approach for them to get to know art objects and artists that they want to know without the physical inconvenience of excessive walking. As well, off-site users are interested in using “Tours” - an innovative main function of ArtLens which encourages on-site visitors’ curiosities to create and share their visiting routines. In addition, by increasing the needs for further pursuing historical and contextual information of collections, ArtLens can turn off-site users into in-person visitors of the CMA.

In this section, I illustrate and analyze what the DIA is doing to enhance millennials’ experience through the interaction of art and technology, mainly according to the research reports from the Research and Education Departments of the DIA and my own observation and reflection. The research from the Research and Education Departments of the DIA includes the following:

- a) *A Summative Evaluation of Visitors’ Gallery Expectations at the Detroit Institute of Arts* (Selinda Research Associates [SRA], 2013) - a “descriptive summative evaluation study of visitors’ experiences with the permanent collection at the [DIA], after the extensive museum-wide visitor-centric renovation and reinstallation” (p. vi)

- b) *Phase I Summative Evaluation of Interpretive Strategies Observations and Responses (O&R) Report A Study of Visitors' Use of 17 Special Interpretive Exhibits* (DIA, Serrell, & Adams, 2012) - a study that analyzed “existing tracking and timing data collected by the DIA evaluation staff and conducted a focused observation and written response study for a select group of interpretive strategies” (p. ii).
- c) *2013 Summative Evaluation Tracking and Timing Report Part 7: Interpretation* (DIA, 2013) is a study that presented “data about use of interpretive elements by 75% of subjects who made at least one stop”, and analyzed “all special interpretations and five basic interpretive types found in galleries” (p. 3).

The Detroit Institute of Arts. The DIA is located in Midtown Detroit, Michigan. It is one of the premier art museums in the United States and is home to an encyclopedic collection with more than 60,000 works that comprise a multicultural survey of human creativity from ancient times through the 21st century (Detroit Institute of Arts, 2017). From the first Van Gogh painting to enter a U.S. museum (Self-Portrait, 1887), to Diego Rivera's world-renowned Detroit Industry murals (1932–33), the DIA's collection is known for its quality, range and depth. “The DIA had been owned by the city since 1919, and its collection, appraised at \$4.6 billion, includes works by the likes of Rembrandt, Van Gogh, and Matisse, as well as Bruegel the Elder's masterful *The Wedding Dance*”; however, since the U.S. federal judge approved Detroit's bankruptcy plan, “the DIA [has been] in control of an independent charitable trust” (Weismann, 2014, para. 2, see Figure 15).



Figure 15 *The Wedding Dance*
(photo by Fang)

The DIA is the most notable American art museum close to my residence at the University of Windsor, which makes it easy for me to reach, explore, and work at this museum. There is only a river between downtown Detroit and my campus. Participating as a gallery service volunteer at the DIA offers me an opportunity to intensively explore the DIA collections, observe millennial visitors' behaviour, and communicate with docents, museum researchers and educators. My coworkers are always willing to answer my questions and to offer help for my study. I have learned a lot from them. Especially Morris, the director of the Research Department of the DIA, as he has offered me related suggestions, articles and data for my study, such as *A Study of Visitors Use of 17 Interpretive Exhibits at the Detroit Institute of Arts* (2012).

In 2007 November, the DIA completed a major renovation and expansion. During launching this reinstallation, DIA's mission evolved "to create experiences that help each visitor to find personal meaning in art" (Detroit Institute of Art, 2017). Meanwhile, the DIA interpretive team formed and created a series of low and high-tech interpretive exhibits (DIA, Serrell, & Adams, 2012). Based on my observation, there were five types of digital interactives at the DIA: (a) *Video* (see Figure 16); (b) *Digital book* (see Figure 17): touch-sensitive

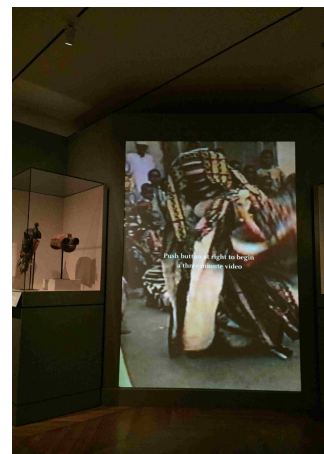
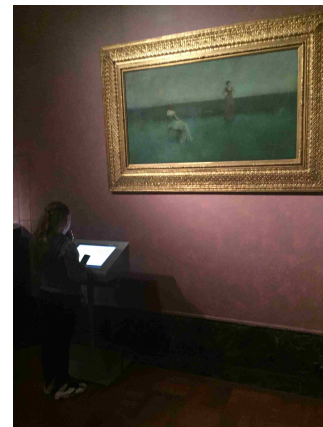


Figure 16 Video Screen in Africa Gallery (photo by Fang)

information tablets on the galleries; (c) *iPad kiosk*; (d) LUMIN: a virtual reality mobile device; and (e) DIA website: rollover collections' images to zoom. Videos and digital books were open to public in 2007. LUMIN is still in the test phase. I started to see iPad kiosks in Rivera Court beginning in May 2017.

Moreover, DIA's reinstallation did not only bring new technological approaches to make the DIA more interpretive but also changed the museum atmosphere as well as visitors'

demographic structure and experiences. When visitors compare the DIA before and after the reinstallation, some mention the lights and color and say, “there’s more light, and I think of that as comforting and welcoming...it’s cleaner. Better lit. There seems to be more art. There seems to be a mission now. Before, it was just dull [and] grey” (Selinda Research Associates [ARA], 2013, p. 16). In addition, others think that the DIA became a more social place after reinstallation, saying things like, “the [DIA] was a place that was very empty... [a few] grad students, or art students who were drawing or talking...now the place seems to be full of family, larger groups, say groups of friends, less solo individuals or just pairs of people” (2013, p. 17). While I am unfamiliar with the situation before and immediately after DIA’s reinstallation, what I have been seeing since my first visit in July 2015 is that there is a sense of awe and curiosity among the visitors to the DIA; as well, there are always a lot of field trips, and small children grabbing their young parents and saying, “look at this”, and trying to click the puppet video wall. A more welcoming and social atmosphere fits millennial visitors’ perceptions of museums, so the current DIA seems successfully in attracting millennial visitors to spend their leisure time there with their family, children and friends.



*Figure 17 Digital Book
(Photo by Fang)*

According to Selinda Research Associates (2013), some respondents emphasize that in their eyes, the biggest change at the DAI after renovation is in educational options. Visitors see more panels and labels on the wall, such as life label, viewpoints label, pull-up panel, eye spy label, and videos (DIA, Serrell, & Adams, 2012). Since the reinstallation, visitors are able to learn much more from art objects with new interpretation tools. During my work at the DIA, I have had enough time to experience all these interpretative strategies and feel that when I go to

various galleries at the DIA, they tell me about the artist, the artistic history of the period I am looking at, and interesting stories to help me understand what it portrayed in the artwork and why artists painted using particular skills and styles. As a millennial in the process of experiencing DIA's interpretations, I can attest to the fact that technological devices are an efficient supplement to non-technological tools. Though not all technological interpretive tools attract me, dining video table, puppet video screen, and LUMNI do. The reason is not that I have interest in experiencing new technology, but technological strategies can enhance my understanding of the context of art objects and help me engage with collections. Furthermore, technological tools prompt my interest in the exploration of other art objects around them and encourage me to read/reread the DIA panels and labels and to discuss with my friends and other audiences. The interaction between art, technology, and traditional approaches provides me a unique, productive, and enjoyable learning and engagement in art. In my observation, this process can satisfy young adults' social needs. On May 19, around 4 p.m., while volunteering at the Spine on the second floor at the DIA, I observed five young adults aged probably around 25 to 30, two women and three men who had an expression of a big surprise on their faces when they stepped into Rivera Court. From their body language and expressions, I am sure that it was their first visit to the Rivera mural. They carefully looked at the mural and then headed to iPad kiosks, where they learned about the mural. They took a look at kiosks and then headed back to different parts of mural again and again until they seemed understand the information and stories about Rivera's mural that the iPad offers. Then they stopped at the viewpoint panel of the mural and were immersed in its content. In this process, they actively talked to each other, shared their personal feelings, and burst out in laughter at times. As an observer, I recorded that they seemed

happy, engaged with the learning offered through the DIA's technological and non-technological interpretive strategies, and found them to be productive.

A. Dining Video Table (DVT)

The dining video table is the most popular interactive exhibition at the DIA ([SRA], 2013, see Figure 18 & 19). It is situated in the gallery "Fashionable Living, Evening Dining" and was opened to the public in 2007 after DIA's reinstallation. At the push of a button, the visitors can enjoy a short video accompanied by a classical French music. The video shows the objects used in an aristocratic banquet in a typical high-society 18th-century dinner party, as well as the wide variety of foods and specialized dining vessels and implements (my observation & work notes).

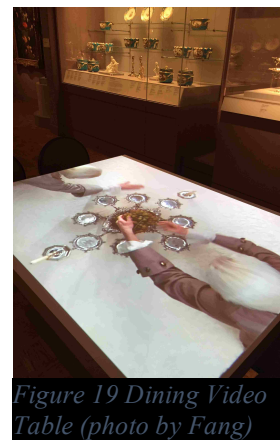


Figure 19 Dining Video Table (photo by Fang)

The analysis written by the DIA and Serrell and Adams (2012) presents the positive effects of DVT based on respondents' reflections, researchers' observations, and field notes: "the

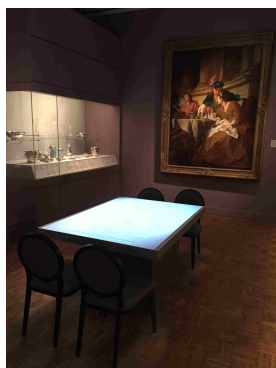


Figure 18 Dining Table Video (photo by Fang)

video prompted visitors to better understand the context and/or function of the objects related to the video... [and is] also successful in helping visitors expand their perception about the artworks, make personal connections, and learn about the objects and creative process" (p. 68).

Furthermore, the videos stimulated users to "draw upon their existing knowledge of history and culture of the times and relate it to what the

videos presented" (p. 68). One visitor noted that the video made her "want to eat together (as a family) and not watch TV"; others also noticed that it "reminded them of their own family and holiday celebrations around dining" and helped them to "see things from a different cultural, historical, and socio-economic perspective" (p. 69).

Despite my attempt to gather more accurate data of DVT's effect on millennial users, Morris informed me that "DIA did not conduct specific studies from about how millennials' reflection about the DVT" and I did not do a survey at the DIA by myself (K. Morris, personal communication, May 19, 2017). Thus, I cannot provide the participation rate of millennials and what were their reactions. In general, millennials do not like to experience technological interpretations alone (E. Bolander, personal communication, May 31, 2017). However, in my view, the uniqueness of DVT is that it can attract the millennials who visit the DIA whether they came alone or with friends and families because it is easy to use and to find connections with people's daily life.

Out of the 84 subjects, "about half of the [them] stopped and watched a portion of the video, more than half talked (55%), also stopped at a surrounding case (52%)" (The Detroit Institute of Arts [DIA] - Research & Evaluation Department, 2013, p.113). The DVT can promote users' curiosities to browse its around art objects. DIA's in-house researchers also pointed out that talking and reading aloud while watching the DVT can help visitors to reflect their experience thoroughly with artworks (DIA - Research & Evaluation Department, 2013). I think the most impressive result of the DVT is that it helped me to see the difference between now and then more clearly.

B. Puppet Video Screen.

The first-time visitors to the DIA would probably miss this amazing video because it is located in the east hallway on the first floor, which is often neglected. Even though I had already visited the DIA at least seven times before, I was not aware of the Puppet Video Screen until my coworker showed it to me on my first volunteer day on May 21, 2016. After touching the bottom of the screen, an animation video begins featuring the Shadow Puppet, Rod Puppet, Stringed

Puppet, and Hand Puppet (see Figure 20). This video is popular among the students from field trips and the family visitors with children. As I recorded in my work journal, the young couples with their children were the largest audience at this exhibition. I noticed children's body language and face expressions while they curiously watched the video, and their parents answering their questions with smile, such as why there are many strips with a puppet; and why was it called hand puppet. After I had discovered it, I always recommended visitors to watch this



Figure 20 Puppet (photo by Fang)

video and showed them how to get there during my volunteering, which I believe may have enhanced their interest in this technological interpretation. This video also allows the users to closely observe on the fascinating details of puppets and have an enjoyable family time. I believe that this video can be one of main attractions that draws millennials and their children to revisit the DIA.

C. LUMIN.

It is a virtual reality mobile device which uses “*Google Tango* technology to provide visitors with new, in-depth ways to engage with the DIA’s renowned collection” (DIA Internal Letter, 2017, para 1, see Figure 21). The DIA is the first art museum in the world to integrate 3-D mapping and smartphone augmented reality (AR) technology into a public mobile tour. According to Morris’s perspectives, “LUMIN is still in pilot phase. It is the first phase of its implementation. There is no evaluation that is going on right now. The DIA has a plan to increase the number of LUMIN stops. Currently, LUMIN is only available for seven stops at artworks. It’s an early version of this device” (K. Morris, personal communication, May 19, 2017).

On January 20, 2017, I had the chance to participate in the first testing of LUMIN. Twenty-seven participants were included in the testing team, of which, 20 were millennials. Most of them were art teachers from the local schools (elementary, high school and college), or museum patrons. LUMIN is a digital device with a touch screen navigator, and has a similar size to a mini tablet. The testing experience was a welcomed surprise. For instance, I clicked the Mummy on its screen and LUMIN immediately showed me a navigation line made of blue dots. By following its navigation, I was able to get to the mummy gallery quickly and easily. The best part was that when I held LUMIN facing the mummy, it could even show its bone structure. I also stopped by a stone object at Africa gallery, which looked like a stone pillow. However, it was a water lid in ancient Africa. As I clicked the function button, LUMIN demonstrated how it worked several hundred years ago by virtual animation. It was a totally new, enjoyable and rewarding experience for me to explore the museum using this device.

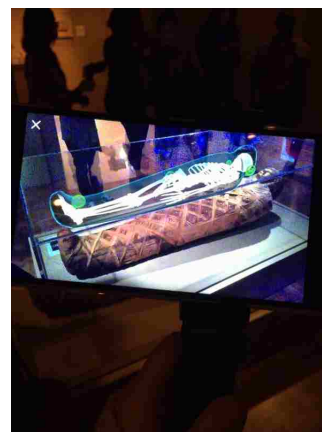


Figure 21 Mummy Stop of LUMIN (photo by Fang)

During the testing, I had the opportunity to talk to Andrea Montiel de Shuman, a technology specialist of the LUMIN. She told me, “The technology team will organize another two tastings for visitors in the following week and collect visitors’ reflections as data to further adjust LUMIN”; as well, she emphasized that, “LUMIN is not focused on technology but on enhancing visitors’ engagement with art works” (A. Montiel, personal communication, January 20, 2017). I shared with her the pros that I saw about LUMIN, including that a) LUMIN is light, small and easy to hold; b) pilot walking lines (way finding) are very helpful and better than a map for museumgoers to achieve a personalized and efficient experience; c) the water fountain stop, LUMIN showed its use in action; d) the inside X-ray demonstrated the inner details of the

mummy; e) short fragments of messages and stories about art objects are informative and educational. I also told her what I believe were cons, such as a) safety: I may hit some other visitors while walking with LUMIN mapping because I would be too focused on its screen to watch my surroundings; b) goals: kids might be interested only in LUMIN and could not engage with art objects; c) technological issues: for some buttons, I needed to click two times or more; d) balance: visitors who use LUMIN may distract other museumgoers who want to avoid the technology at the museum, so how to strike a balance for visitors' different needs is an issue for LUMIN.

Overall, I think that technology can help 21st century museumgoers with tools like beacons, iPads, body tracing technology, animated video imagery, touch screens, and haptic interfaces. I agree with Nolan (2016) that,

Technology provides museumgoers with detailed information, customized viewing experiences, and precise location mapping services, [furthermore], technology can be used as an accessibility tool to make the museum experience more inclusive for visitors with disabilities such as hearing loss, visual impairment, and Autism Spectrum Disorder. (para. 1)

However, I cannot say that technology can enhance all visitors' engagement and learning at art museums because it depends on the content of technological approaches, museumgoers' diverse identities, and museums' various missions. Regarding millennial visitors, my interviewee Ridenour, who is a Research Specialist of the CMA and a millennial, said, "a lot of factors for each millennial, in general, can affect whether they want to visit art museums. No two people within a generation are the same." Ridenour added that,

We found a big difference around how often they visit art museums based on: How much money do they make? How often do they visit other art museums? and whether they are married or not; whether they have children or not; their cultural background, such as whether or not they grew up going to art museums; and their academic backgrounds.

(Personal communication, May 17, 2017).

I agree with Ridenour that millennials' needs and interests at museums are various and changeable. Therefore, there is a lot of work ahead for art museums that intend to pursue appropriate technological approaches to appeal to millennials. I wanted to know which main factors for implementing technology in galleries matter to enhance millennials' interest in art.

[What Do American Art Museums Perceive to Be the Factors that May attract Millennials to Art Museums?] Findings Based on Interviews, and Autoethnography

Strong millennial attendance at the CMA and the DIA. According to the National Endowment for the Arts' (NEA) data, in the period of 2002 to 2012 American art museums faced a tough situation because young adult attendance has dropped at a roughly 20% rate and this situation continue to today and the national average visitor age for art museums attendances in U.S. was 46 (Vankin, 2016). However, at the CMA, Bolander told me that, "we are actually seeing a pretty steady attendance rate since the Atrium opened in 2012 and Gallery One opened in 2013. On average 30 percent of all visitors on a given day are millennials aged 18 to 35" (E. Bolander, personal communication, May 31, 2017). As well, Morris stated: "for about the last few years, [at the DIA] we have seen an increase in millennials, so about 50 percent of our current adult visitors are people aged 18 to 34" (K. Morris, personal communication, May 19, 2017). It raised the question why they can draw so many millennials when many American art

museums cannot. I conducted further investigation and analyses based on my interviewees' responses.

The competition from the many options for leisure time. People think of museums as leisure venues, as Morris said, “people come to art museums to engage with friends and family; people come to see art; people come to museums as an escape from their everyday lives; and people come to learn” (K. Morris, personal communication, May 19, 2017). However, art museums are not only option for millennials and they have many options for their leisure time. Some of their options are Netflix, YouTube, gyms, social media, trips, biking, social activities, time with friends at bars, or just staying at home relaxing. I realized that the competition from other options for leisure time is a big challenge for museums that wish to draw millennials to visit them, but, personally, I could not be sure how significant it is. Morris and Bolander provided me with clearer answers on this. For example, during the interview with Morris, he said, “I would say the competition from leisure time options is probably the biggest challenge to draw millennials to museums” (K. Morris, personal communication, May 19, 2017).

Bolander stated that “multiple options for leisure time are proving challenging for museums desiring to win over millennials.” She also revealed that, according to her research at the CMA, she had found other problems:

- a) millennials are just not aware of many offerings that CMA has, not even the MIX that is a popular art social event for young adults on the first Friday of each month at the atrium with collections, mixing ever-changing art, music, dance, mingling and cocktails;
- b) even if they did know, they don't know how it relates to them, especially for those who do not have children at home because millennials with children at home seem more likely go to art museums (E. Bolander, personal communication, May 31, 2017).

The reason CMA’s researchers could find these problems that Morris did not mention is that CMA offers many events and programs targeted at millennials and has done several studies about their millennial visitors; however, at the DIA, they have not yet collected data that target to millennials. Therefore, it is possible that the DIA has the same problems that the CMA is facing, but they did not yet realize it. At any rate, the DIA and the CMA are both dealing with the challenges that they face, and both have very strong numbers of millennial attendances.

The massive renovations which have delivered technological strategies. I found that the CMA and DIA both had accomplished a massive renovation within the past few years. Another similarity between the CMA and the DIA is that newer and more interactive technological devices were opened to the public after that. The CMA fully opened at the end of 2014 after an eight-year reinstallation project. Its new Atrium opened in 2012, and Gallery One in 2013, and many celebrations were held in 2015 (see Figure 22); the DIA reopened its galleries after more than six years of renovations on Nov 23, 2007, and they involved an



Figure 22 Atrium at the CMA (photo by Fang)

extensive use of labeling and other educational aids throughout the museum at the time *Videos* and *Digital Books* first appeared in galleries. When I asked Bolander whether the reinstallation enhanced the CMA’s millennial attendance, she said “the reinstallation is a unique reason for the CMA to gain a big and steady number of millennial attendants since 2012.” (E. Bolander, personal communication, May 31, 2017). In answer to the same question, Morris told me that, “the DIA’s renovation is an important reason to increase more young adults to visit it because the atmosphere became more active, welcoming, and attractive for the young” (K. Morris, personal communication, May 19, 2017).

I feel that the CMA and the DIA successfully rethought the role of the museums in order to better serve people during their reinstallation project. For example, they realized that museums need to display works with as much additional information as possible and provide visitors as much access as possible to the knowledge of art. This is because museums are not

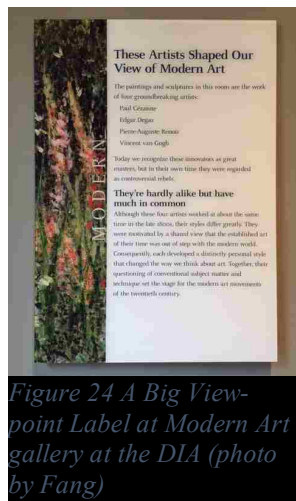


Figure 24 A Big View-point Label at Modern Art gallery at the DIA (photo by Fang)

only for the well-educated, but also for all people who simple love art. For example, more multiple labels and big-sized panels and

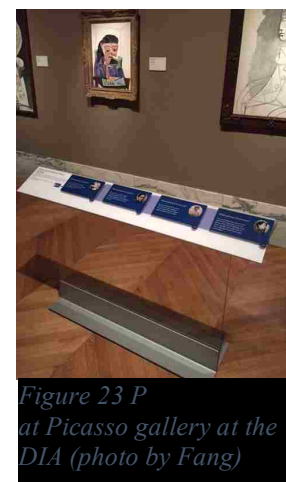


Figure 23 P at Picasso gallery at the DIA (photo by Fang)

technological interpretations have appeared since the DIA reopened to the public (see Figure 23 & 24). In my view, all DIA's non-technological and technological interpretive aids do not just aim at educating visitors, they also enhance visitors' interests in art, and create a more enjoyable and relaxed experience that inspires people to keep visiting the DIA and helps them to achieve a life-long educational process.

Various ways to implement technology. The CMA and the DIA implement technology in different ways. The DIA spreads the technology out through several galleries while the CMA have built one big space – Gallery One, which offers cutting-edge technological devices in one place. Participants at Gallery One can interact fully with art through technology, especially by using physically interactive elements. The DIA more often uses technology in order to ask, “Did you see this in a painting? What else do you see?” It encourages visitors to look, to see things from the artist vintage point and to understand the reasons why the artist has chosen certain approach. I also feel that the DIA specifically uses technological strategies as supplements for the non-technological interpretations since the DIA has a much larger number of various,

knowledgeable, and impressive non-technological interpretations than technological tools for visitors. Non-technological approaches are located at more accessible locations than technological strategies. Personally, I prefer these non-technologies. However, Morris disagreed with my ideas about “supplements” theory. He stated that “I wouldn’t say DIA’s technological devices are supplements for the non-technological interpretive strategies. Each technological device at the DIA is a component of the displays and is about engagement for each visitor, and not for one demographic group, like millennials.” (K. Morris, personal communication, May 19, 2017).

At the CMA, Gallery One has a more focused demographic appeal, although originally Gallery One did not try to appeal to any specific demographic group. Bolander told me that “we can see every age group at Gallery One, but most users of Gallery One are millennials and millennials with their children” (E. Bolander, personal communication, May 31, 2017). In contrast, the CMA’s management knew and accepted the need for a demographic appeal, and they have been working on attracting more millennial attendees to Gallery One. While I was interviewing Bolander at the CMA, I saw that Gallery One was in middle of a reinstallation and wanted to know why. So, I asked Bolander for more information and she told me,

All old Lens will be gone and are going to be replaced by new Lens. [New Lens] will be all gestured. Users will not need to touch any screens; they will only need to move their arms and things will happen. So, users can use their arms instead of their fingers. The new iteration of Gallery One will more focus more on millennial audiences. It will officially reopen in September. (E. Bolander, personal communication, May 31, 2017)

Clearly then, Gallery One is going to be much more kinesthetic, interactive, and enjoyable in its new iteration. Moreover, Bolander stated that the old Lens is being totally replaced with gestured

technological devices because data suggest that the visitors want more physical and interactive elements at Gallery One. She also said that “the new iteration of Gallery One will place more focus on millennial audiences” (E. Bolander, personal communication, May 31, 2017). The CMA is looking forward to seeing additional millennials engaging with their collections by the new gestured technological devices at Gallery One.

a) Different Museums, Various Missions.

Another element that will play a significant role in how to implement the interaction of art and technology is the museum mission because different museums have different missions. Morris reminded me that “the museum’s mission is the top protocol for museum management to make decisions” (K. Morris, personal communication, May 19, 2017). For example, the DIA’s mission is “to help each people to create personal meaning of art”; and the CMA’s mission is “for the benefit of all people forever.” I cannot recognize significant differences among these two missions but, I think of “an unpatrolled experience for visitors of all ages”. As David Franklin, Sarah S. and Alexander M. Cutler Director state,

Gallery One offers an unparalleled experience for [because its] space connects art and space, art and ideas, and people with people. We’re thrilled to share this new space with the Northwest Ohio community, for both first-time and repeat visitors, and we are especially proud to lead the way internationally in using technology to enhance and customize the art museum experience. (Cuscott, 2013, para 3)

This means that Gallery One was from its beginnings designed to fit all people, which is exactly the CMA’s mission: “For the benefit of all people.” I understand why CMA designed one space to launch technological interactive devices and did not spread them out in different galleries. It comes down to the CMA’s mission – “For the benefit of all people”. It offers one particular

space to individuals who are interested in technological opportunities to allow for the interaction with art, technology and physical movements, in addition, it also keeps individuals who are not interested in technological tools away from technology employed at art museums. This allows the CMA to serve all people. By comparison, the DIA installs a few technological interpretations in different galleries, which are mainly used to encourage visitors to see, to think, and to talk. This approach helps each audience to create their personal meaning about art objects while allowing other visitors to bypass many additional technological aids.

b) Financial factors.

Implementing technology is a matter of how much the museum wants to invest because creating and maintaining technological strategies requires a large amount of funding. As a consequence, museums have to decide how much they want to spend since every dollar they spend on technology cannot spend on something else and therefore they need to be sure the investment is worthwhile. As Bolander said,

Museums have different philosophies about the return on investment [when introducing new] technology. The CMA is sort of the leader in the field of implementing the interaction of technology and art. We have invested resources, serious resources in it. Because we feel that it's and an important part of our core mission. (E. Bolander, personal communication, May 31, 2017)

In the other hand, the DIA does not have big numbers of technological interpretations, and some digital devices' locations are easily missed by visitors. Moreover, the DIA did not use much technology as a supporting strategy at special or temporary exhibits. As a result, I thought that the DIA did not have a strong interest in utilizing technology and I relayed my thoughts to Morris. He disagreed with me and corrected my beliefs, stating,

The DIA is very interested in helping people to connect to art and to enhance their experience with art. Technology is just one way. But technology is also probably the most expensive [interactive] way. With any decisions [the museum] makes about technological approaches, there is a matter of the cost and time for development. So, money is always the fact. It is not only about interest, it is more about resources and opportunities. (K. Morris, personal communication, May 19, 2017)

Also, millennials care about their money and may wonder whether it is worthwhile to pay \$10 or \$20 to visit an art museum. Drake (2014) indicated that, “Millennials are more burdened by financial hardships than previous generations” (para 2). I prefer free admissions because they increase my opportunities to visit and revisit. For example, I kept visiting the National Gallery of Art in Washington D.C. for a week in summer of 2014 because it was free. In addition, the CMA offers free admission for all people, except for special exhibitions. For students of the Case Western Reserve University, the CMA offers them complete free access, including all special exhibitions, talks, and events. I am sure this policy can encourage the students of Case Western Reserve University to visit the CMA and foster their interest in art.

The relevance of content. Millennials have various values, interests, and identities. As well, many technological options are available to them. How can art museums decide which technology will enhance millennials’ experience effectively? With respect to these considerations, Bolander noted that the most important factor is content and that “content needs to be relevant to millennials” (E. Bolander, personal communication, May 31, 2017). Likewise, Morris noted that “the most important factor can attract millennials to visit art museums is relevance, such as relevant programming and exhibitions, hours that [work with] their schedule”

(K. Morris, personal communication, May 19, 2017). Thus, the technological strategies only work for millennials when certain factors come into play.

I also wanted to know whether utilizing digital technologies do indeed enhance millennials' engagement and learning at art museums. Bolander and Ridenour gave me affirmative answers. As Bolander stated, "I definitely think that it can help, but it comes down to the content. The technology is a great way to get to connected, but we still need to have good products" (E. Bolander, personal communication, May 31, 2017). Morris thought that technology is a great tool for creating deeper relationships with visitors, for presenting contents in new ways, making the content more accessible, but he did not state this in the same affirmative tone as Bolander and Ridenour did (K. Morris, personal communication, May 19, 2017). This subtle difference in their tone is very interesting. I think the potential reason behind this is that Bolander and Ridenour are both millennials while Morris is a baby-boomer. In general, millennials are more interested in exploring new technologies than previous generations.

I believe that museums will continue to cooperate with the ever-changing technology to enhance audiences' experience. Museums are also facing challenges. For instance, how they can satisfy the needs of millennials who enjoy using these technological devices during their visits and at the same time continue to attract to those who want to keep themselves away from the technology. Consequently, museums will have to do more research and communications better with millennials to understand more exactly the kind of the experience they want, and what kind of tools the galleries need to consider as valuable to their visits. With these inputs, museums should be able to formulate the strategies that integrate better into millennials' lives.

Chapter Five: Discussion

In previous chapter, I illustrated the data from pre-existing studies, my observations and reflections, and the interviewees' perspectives. As well, I analyzed these data to understand how American art museums are working to attract more millennial attendance and implementing technology in galleries to enhance visitors' engagement with art, thereby fostering art education. In the process of analyzing the data, I moved from a descriptive to an interpretive understanding of the data. This process dramatically reorganized my ideas and knowledge about art museums and millennial visitors. Based on perspectives from my interviewees, theories from previous research, and my observations and reflections, I gained a deeper understanding of the intersection of art museums, millennial visitors, and technology in galleries. Here are my findings: a) more and more American art museums are using technology; b) technology can enhance some but not all millennial visitors' engagement with art; c) with different missions and resources, museums use technology in various ways to attract millennials; d) technological strategies only work effectively for millennials when the content is relevant to them; e) on the whole, American art museums are facing a decline of millennial attendees; however, the CMA and the DIA have been seeing a strong increase in millennial attendance for the last few years. Technology is a reason for this, but not the only reason.

In the following section, I will review the key findings to the research questions: "What are American museums doing to enhance their millennials' interest in art?"; "What do American art museums perceive to be the factors that may attract millennials to art museums?"; "How are two American art museums using interactive displays and digital technology?" As well, I will address the significance and limitations of my study and my ideas about enhancing millennial attendees in the future.

Striking a Balance between Various Millennial Visitors

There is no doubt that the implementation of technology has improved the accessibility of art museums, which makes the museum experience more inclusive and educational for visitors. Utilizing modern technology is an effective way to reduce the feeling of exclusion among millennial visitors (Gofman, Moskowitz, & Mets, 2011). Giving 21st century millennial visitors relevant content using technological approaches is a critical element for art museums to attract more millennials. American art museums are willing to embrace technology using some successful strategies, but they still have a long way to go in exploring how to integrate technology in art appropriately and to make visitors feel comfortable with technology in galleries. They are facing strong competition from other options for leisure time, which Bolander and Morris both considered to be the biggest challenge to attracting more millennial attendees. As a millennial, I agree with them. In fact, I am always struggling to decide what I will do in my leisure time.

According to Vaux Halliday and Astafyeva (2014), today's cultural consumers' role has changed: they want a) more self-expression and for personalized experience, so museums encourage visitors to take selfies and share their photos and reflections on Facebook, Twitter, and Instagram; b) more interactive experience, so museums create interactive displays to enhance visitors' experience; c) more social interaction, so museums offer innovative events like MIX at the CMA, which mixes art, music, workshops, artist talks, dancing, drinks, and food. With respect to these changes, museums have to offer more attractive, creative, interactive new experiences and products to visitors. These new innovative strategies can also fit well with millennial cultural consumers' (MCCs) attendance motivations since MCCs are "the potential key consumers" for present-day museums (Vaux Halliday & Astafyeva, 2014, p.120). Vaux

Halliday and Astafyeva summarize the MCCs' attendance motives as follows: "a) social interaction; b) entertainment and experience; c) self-development; d) prestige" (2014, p. 126).

Although cultural consumers' roles have changed, traditional visitors still exist and will continue to exist for a long time. Traditional visitors are not only older visitors; some young adult visitors prefer to use traditional ways of browsing artworks at art museums as well. Traditional visitors consider art museums as being permanent, unchanging fixtures of the cultural landscape; they do not need creative, innovative, and technological approaches to distract them while browsing timeless masterpieces and rare artifacts. Therefore, art museums need to maintain a healthy balance between traditional visitors and today's cultural consumers. Additionally, desires and interests of individual cultural consumers vary widely within the same demographic group. For example, millennials with different incomes, educational histories, ethnic backgrounds, jobs, working hours, interests, and places of residence, can show very diverse needs for art museums. Furthermore, whether or not millennials have children influences what they look for in museums and what kind of technological interactive devices they want to experience at galleries. Hence, art museums need to achieve a balance between various needs within the same generation group.

Striking a Balance Between the Pros and Cons Caused by Using Technology

Technology is a vital tool for supporting and empowering twenty-first century museumgoers who wish to enjoy in a more productive and interesting experience. However, the use of digital technology in museums is often seen as a double-edged sword. Many people come to museum "as an escape from their everyday lives", as Morris said, and he emphasized that, "museums are always a social venue" (K. Morris, personal communication, May 19, 2017). In my experience, I can find peace and feel both intellectually and mentally refreshed while

immersing myself in art museums. While some people believe that technology enhances the museumgoer's experience, others feel that the constant distractions associated with most modern technological devices detracts from the holistic reflective experience.

The Cons. Besides the inherent distraction, using technology may cause “serious negative side effects, including shifts in cognitive processing, shrinking attention spans, delayed or deferred social skill development, and drops in fundamental literacy skills” (Nolan, 2016, para. 4). For example, when I was younger and at college, I did not use a mobile phone, Skype, and social media to communicate with my friends, my parents, and my teachers. Face-to-face communication incorporates body language, which can easily make meanings clear and build trust. With screens, on the other hand, physical contact and emotional expressions are limited. I found that continuous use of electronic media leads to lower confidence when communicating in person, especially with strangers. I lost part of my social skills because of extensively using my smart phone, laptop, and tablet. However, people of all ages have come to accept the everyday use of technology as a way of life.

Regarding millennial visitors, according to Nolan (2016), “some millennials have difficulty distinguishing between digital worlds and reality, and sometimes even prefer the digital world, pointing to a digital dependency” (para. 4). In my view, this raises an important consideration about Gallery One's new iteration: all technological devices will be gestured. In September of 2017, the CMA will offer a new physical and interactive experience at Gallery One. Why did the CMA decide to make this change? According to their data, one reason is that they found users prefer gestured devices to touch devices (E. Bolander, personal communication, May 31, 2017). I think that the CMA probably also realized that millennials spend too much time sitting in front of the screens and need more physical activities to feel the real world. Besides,

most users of Gallery One are millennials. The gestured Lens can help to foster their interest in distinguishing between digital worlds and reality because most of the users at Gallery One are millennials.

In fact, there are some debates in museum circles regarding the incorporation of technologies in museums. Basically, implementing new technologies will reduce the resources and the staff that could have been invested in other projects, as technologies are costly, develop quickly, and need time and specialists to maintain. With a limited amount of resources, implementing technology-based approaches is likely going to reduce their ability to collect and preserve artworks. At this point, Morris stated that the DIA has been interested in using technology, but it depends on the resources and schedule (K. Morris, personal communication, May 19, 2017). Consequently, in the twenty-first century, museums are striving to create a good balance between “embracing technology” and other missions and values in order to support visitors to learn and engage with art objects.

The Pros. Technology can attract the millennials. In 2010, the Pew Research Center (PRC) released a series of reports that revealed that millennials have strong an interest in modern technology and use digital devices every day. In the case of museums, technology can provide visitors with precise location mapping, 3D viewing, customized information searching, and gestured-based interactive devices, which increase their engagement with the arts. Additionally, competing with Netflix, YouTube, TV, socializing, computer games, and sports for attracting audiences, technology can help to bridge the gap between museums and millennials. According to Nolan (2016),

Google Art Project represents a prime example of the power of technology to enhance the museum experience: rather than deterring attendance, the Project actually drives it.

The opportunity to view priceless works of art online acts as a [teaser], rather than a substitute – visitors are compelled to visit the museum in order to see the [real thing].

(para. 8)

More importantly, technology can be used as an accessibility tool to make the museum experience more productive for young adults with disabilities such as those experiencing hearing loss, visual impairment, and autism. For example, “Hands On” at the Art Institute of Chicago is a multisensory tour, including “activating sight, sound (when/if possible), and touch”, for adults with Alzheimer or poor vision (AAMD, 2015).

Millennial museumgoers of the twenty-first century tend to be participants rather than massive observers. As consumers of cultural organizations’ products, they want to gain values, such as emotions, feelings, memories, relationships, self-development, from their visits and use of museums’ services (Gronroos, 2008; Kolb, 2005; Kotler and Kotler, 2000; Vargo, 2008). These values are co-created by museums and audiences. Technology can help museums to transfer the knowledge from curators and artists to visitors. For example, from the beginning at the CMA, the intention of Gallery One was to transform their visitors into participants rather than passive observers (Alexander, 2014).

Technology is very much implanted into the everyday lives of millennials, and so it seems logical that using technology at museums has the potential to offer engaging and productive experience to this demographic group. Nevertheless, the question is how to balance these pros and cons to maximize technology’s pros and minimize its cons. Technology is a powerful tool to increase attendances and enhance engagement, but it is not the only tool. Technology is one strategy, so it needs to collaborate with others, such as non-technology interpretations. For the sake of enhancing millennials’ interest in art, museums need to identify

which strategy is appropriate to serve their millennial audiences. Both museums, the CMA and the DIA, Art museums need to strike a balance between the use of new technologies and satisfying traditional museumgoers who prefer studying the art works without any technological devices, as well as to strike a balance between visitors' various needs.

Recommendations for Enhancing Millennial Attendance for the Future

My observations and reflections during volunteering at the DIA and visiting the CMA, communications with museums researchers, and my art museum experience at different art museums reinforced my understanding about the relationship between art museums and millennials, as well as the strategies of using technology to help audiences. Based on the findings and literature review, I suggest that museums management and researchers consider the following recommendations.

Collect data from outside of museums. Almost all participants of the CMA and the DIA studies were their visitors. They did not collect data from the potential visitors. Museums want to attract more visitors and enhance more people's interest in art. Thus, they need to better know/figure out why those who do not visit a museum or do not visit regularly, and then analyze what factors influence their potential of walking into museums.

Create more awareness about art museums among millennials. Art museums, like the CMA, have done much significant work and created many events focused on millennial visitors' needs. However, millennials do not have enough information about what art museums are doing. It is a big problem. I feel that expanding the use of social media may be a solution to create more awareness about art museums among millennials.

Offer international college students more support, artistic co-op experiences, learning opportunities, and activities. Most college students are millennials. The CMA and the

DIA are surrounded by several universities, which have many international students. But I seldom saw Chinese college students browsing at the DIA. Likewise, I asked Bolander if international college students visit the CMA often. She said, “not often” and added that,

We have graduate programs with Case Western in art history. We are going to create a new Keith Institute to serve that increased graduate program really and also added other things, because we are very committed to sort of teaching the next generation of creators. And at the museum, educators have been leading art history students having unique experiences and also giving hands-on and art training. That’s sort of unique thing that we have worked with Case institution. The other program that we have done with medical students teaching them using Visual Thinking Strategies (VTS) as a mean of communication. (E. Bolander, personal communication, May 31, 2017)

I feel that VTS can be helpful for other major’s college students, not only for medical students. Morris also introduced that DIA educators use VTS to employ their programs with young adults (K. Morris, personal communication, Aug 1, 2017). International college students have different cultural and language background. Museums need to consider their diverse needs while creating interpretation approaches and learning opportunities for them. For example, neither the DIA nor the CMA offer Mandarin audio guide. I believe that they can attract many more Chinese college students if they provide an audio guide in Mandarin or Cantonese. Additionally, if museums can provide the fragments of information in their apps, website, social account, and technological interpretations in multiple languages, it definitely will enhance international millennial attendees’ learning and engagement at museums.

Offer special events for millennials in the Fall and Winter. During volunteering at the DIA, I found that there are more millennial audiences in the Fall and Winter than in Summer.

People love outdoor activities in Summer. So, museums need to grasp the time in Fall and Winter to draw millennials through special exhibits, events, and curators' talk. Prestige can encourage potential millennials' interests to visit museums. In this respect, curators' and artists' talk can be an effective strategy to attract millennials. For example, I watched an orchestra on June 15 of 2017 in Toronto. This was not a traditional orchestra because it was the combination of the Ballet and orchestra. It was a new performance style for audiences. In the intermission, in the main lobby there was an artist lecture about ballet and orchestra. This talk attracted a big crowd of the young adults who were actively talking to each other about this new style. I also saw them share the photos of the lecture and their ideas on social media.

Create more child-friendly events. Millennials who have children visit museum more often than those who do not have children. This offers museums an opportunity to attract more millennial attendees through child-friendly events, for instance, kids' painting exhibits. Last month, there was a children's painting and artwork special exhibition at the DIA, which drew many family groups which then would enjoy a beautiful leisure family time at the museum. Child-friendly activities at art museums would offer children and their parents and grandparents a great opportunity to reinforce the family bond while engaging with artworks.

Significance to Art Museums' Community

This study compared the CMA and the DIA and their use of technology to enhance their visitors' experience, especially for millennial visitors. The success of the CMA and the DIA in this respect can serve as an example for other American art museums that desire to increase millennial attendance and engagement through implementing technology. Indeed, the DIA's and CMA's use of state-of-the-art interactive museum technology offers a model that could be adopted by museums worldwide. The findings of this study would benefit the museum

community because technology plays an important role in achieving a more enjoyable experience for visitors today. This is especially true for art museums that did not collect data and conduct research about millennial visitors and using technological strategies by themselves, unlike the CMA and the DIA. I believe that they can build on the findings of my study.

Significance to Participants

My three interviewees, two museum researchers from the CMA and one from the DIA, were receptive to the idea of a Chinese graduate student from a Canadian university analyzing how American galleries can enhance millennials' experience using technology. Furthermore, during our time together, they also felt that I gave them new insights about millennial visitors and the interaction of technology and art because my ideas always reflect my cultural background, working experiences and museum experiences. For example, I always pay attention to the Chinese and Chinese-American visitors' behavior and try to better understand what they want from art museums. Also, I offered interviewees my suggestions on how to provide more access to millennial visitors and encourage more millennials from different cultural backgrounds to visit museums.

This study allowed me to learn more about what I am truly interested in: art museums. Before conducting this study, I had visited art museums in various countries, but I did not know how art museums run, display their art works, and enhance visitors' experiences. I also discovered that a typical art museum has a department that conducts research about the museum and its visitors. As a result, I now have a much better understanding of how museums view their mission, history, education, management, funding, visitors, and technological approaches. Conducting this study and working at the DIA also help me to foster



Figure 25 Fang and her DIA coworker

connections with museum researchers, educators and docents (see Figure 25). Furthermore, in the process of conducting this study, new questions continually occurred to me about collections, museum education and mission etc., but I do not have answers or solutions yet. I need to do more research to find answers to my questions.

Limitations

There are various limitations that relate to this study. My observations and reflections, previous relevant studies, and three interviewees provided the data for this study. I have three interviewees, including the Directors of Research and Evaluation Department at the CMA and the DIA who offered me highly professional opinions based on their research and data. All my participants were recruited on a voluntary basis, and all of them allowed me to use their real names in this study. However, the number of interviewees and all my interviewees are from the Research and Evaluation Department which raises a concern about generalizability (Yardley, 2000). Moreover, I did not interview people from Technology Department and Marketing Department at the CMA and DIA. Consequently, I could not get enough accurate data about the intersection of social media and millennials. Also, I did not interview millennial audiences at the CMA and the DIA, and only observed them while I was taking notes. I might have known their ideas about art museums better if I could talk to them.

As a researcher, I do not have art history or museum educational experience. Although I tried to read as many relevant articles as possible, volunteered at the DIA, and made many visits to the CMA, I still feel that it was difficult to get an accurate idea of what was actually going on. My analysis in Chapter Four gave me a surface understanding, rather than a deep understanding of the related phenomena. Additionally, the CMA and the DIA both have been seeing strong number of millennial audiences. Thus, this study would be enhanced if I could add one American

art museum that is facing a decline in millennial attendance. Unfortunately, I was unable to acquire permission to investigate a third or fourth museum in USA to test this hypothesis.

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Appendix A

Keys to the Collection App

The Barnes Foundation in Philadelphia offers *Keys to the Collection App* that provides “a series of mini games that help [visitors] connect to the collection with thrilling new technology” and allows visitors to explore stories and new ideas about art objects, using 3D immersive graphics, touchscreen capabilities, and multiple-layered games content (AAMD, 2015, p. 7). If game participants can complete their mission by using their findings while exploring collections, they will earn badges and points. This allows them to create their own art gallery and win the game. Although the app was originally designed for youths ages 7-14, it is also appropriate for millennials, especially those who are tech savvy. Furthermore, the app can inspire “refined looking, creative thinking, and innovative designing that enhance the very practice of art and art making” (p.7).

Appendix B

Hands On!

At the Art Institute of Chicago (AIC). *Hands on* is a multisensory tour, including “activating sight, sound (when/if possible), and touch”, for adult people with Alzheimer and low vision: “Museum staff selected objects from the collection that [is to] be scanned, 3D-modeled, and printed [at a 1:1 scale] for participants to hold and touch” (AAMD, 2015, p. 6). “At each stop on the tour, participants handle the object replicas while discussing [...] the original works of art, listening to music related to the objects, and interacting with the objects by making sounds from them (a bell, a whistle)” (p.6). Besides the Alzheimer and low vision visitors, this tour allows all visitors “a unique tactile experience not otherwise possible in the galleries, and foster[s] a greater understanding of form and function” (p.6). In terms of millennial visitors, this tour can satisfy their curiosity by letting them touch art objects. For example, at the DIA, there is only one art object located on the first floor that visitors can touch. During my work experience, I often saw young adults excitedly waiting in line to touch it and take a selfie. I was asked to help them take photos together with friends and family. Then they always immediately shared these photos in Facebook or Twitter. This approach can reduce the millennials’ feeling of being excluded from museums.

Appendix C

The Pen

The Pen is at Cooper Hewitt, Smithsonian Design Museum in New York, NY. This pen is not a real pen. The Pen is “a device given to visitors that allows them to save and collect anything they see (via NFC-enabled wall labels) and make on the interactive tables” (AAMD, 2015, p. 15): “On the table, it looks like a gray plastic crayon the size of a turkey baster. In the hand, it feels pleasing, chunky, hefty like a toddler’s rubber ball. And at the museum, it does something magical” (Meyer, 2015, para 1). The *Pen* allows visitors “to emphasize the process of design, reveal the breadth of the collection, and importantly orient visitors to the new way of being inside the museum itself” (AAMD, 2015, p. 14). This innovative tool can transform the millennials’ museum learning and experience while they are working together with an in-house web API, three different sizes of multi-touch tables, a room-sized projection space, a historical house virtual tour, and a gestural navigator.

Appendix D

Flipped Learning for Educators

It started in 2015 when the Metropolitan Museum of Art (Met) in New York began to the pilot *Flipped Learning for Educators*. Met has “a history of presenting blended educator programs that combine online instruction with in-person teaching” (AAMD, 2015, p. 27). *Flipped Learning for Educators* moves museum curators’ and educators’ video lectures and demonstrations and makes them available through websites such as Khan Academy. This approach allows teachers and students from elementary schools to college to view as many times as needed to grasp collections’ information and stories. Additionally, viewers can get access to feedback and support from peers and educators. Millennials use the internet regularly. Therefore, it is a productive way for them to explore art objects, enhance their understanding about art, and share new experiences with friends by social networking. *Flipped Learning for Educators* not only can enhance educators’ knowledge and skill, but also enhance potential millennial visitors’ interest in art. Moreover, Met has an innovative museums tour entitled “Museum Hack”. Museum Hack has three key features: 1) tour guides who are not volunteer docents. Most of them are young educators, actors or museum lovers; 2) The use of games and not classes about art history. Millennials prefer to be entertained before they can be educated. The visitors imitate the gestures from paintings or sculptures and take selfies and share photos in social media; 3) In this case, storytelling is more important than art history.

Appendix E

Transforming the Art Museum Experience: Gallery One (2013)

It is a study conducted by Alexander, Chief Information Officer of the CMA; Barton, Founder of Local Projects and creator of the media design for the 9/11 Memorial and Museum; and Goeser, Director of the Education and Interpretation Department of the CMA and her research focus on object-based educational programs for pre-K-16 students and adults. This study offers deep analysis on how Gallery One and ArtLens use interpretive technology such as multimedia installation, mobile application, and interpretive interactive installation to engage visitors actively in new kinds of experiences with works of art and to enhance visitors' intergenerational learning. One result of this study is "a highly innovative and robust blend of art, technology, design, and a unique user experience which emerged through the unprecedented collaboration of staff across the museum and with award-winning outside consultants" (para. 1);

Appendix F

Gallery One, the First Year: Sustainability, Evaluation Process, and a New Smart Phone App

(2014)

It is an evaluative study of the inaugural year of Gallery One conducted by Alexander. Gallery One was opened to the public on January 21, 2103. “The Cleveland Museum of Art created Gallery One to build audiences by providing a fun and engaging environment for visitors with all levels of knowledge about art” (Alexander, 2014, para. 1). This study addressed three questions: 1) Is the concept behind Gallery One working? 2) How can the museum sustain Gallery One? 3) What are the next steps? In this study, Ms. Alexander analyzed gaming & playful experiences through the Gallery One Lenses and ArtLens, referenced the audience research team's study involving observations and interviews with visitors, and discussed “how the Collection Wall and ArtLens app are being utilized by visitors as tools for discovery and for creating new pathways through the museum's collections” (Alexander, 2014, para. 1).

Appendix G

Five Digital Interactives at the DIA

Based on my observation, there were five types of digital interactives at the DIA: (a) *Video*: a big video screen in the Africa gallery to show a celebration dance in an African village; a dining room table video in the French Life Gallery to show the process of a traditional French dinner; a wine mixing video wall to show how the objects on display were used; a touch video screen embedded in the window display of puppets on the hall of the first floor; and a Potters Technique Video at the first southwest floor; (b) *Digital book*: touch-sensitive information tablets on the galleries of the second floor; (c) *iPad kiosk*: a closer look at the Rivera mural using either an iPad from the multimedia desk, one of iPad kiosks in Rivera Court, or a visit to dia.org/Rivera_tour on their own smartphone or tablet; (d) LUMIN: a virtual reality mobile device; (e) DIA website: rollover collections' images to zoom.

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