8-22-2014

Museum Visitors' Perceptions of Mobile Games: A Case Study

Sarah Exley Ozimek

The Rochester Institute of Technology

Department of Communication

College of Liberal Arts

Museum Visitors' Perceptions of Mobile Games: A Case Study

by

Sarah Exley Ozimek

A Thesis submitted

in partial fulfillment of the Master of Science degree

in Communication & Media Technologies

Degree Awarded:

August 22, 2014

The members of the Committee approve the thesis of

Sarah Exley Ozimek presented on August 22, 2014.

_____

Patrick Scanlon, Ph.D.
Chairman and Professor of Communication
Department of Communication

_____

Tracy Worrell, Ph.D.
Associate Professor
Department of Communication
Thesis Adviser

_____

Grant Cos, Ph.D.
Associate Professor
Department of Communication
Thesis Adviser

_____

Rudy Pugliese, Ph.D.
Professor of Communication
Director, Communication & Media
Technologies Graduate Degree Program
Department of Communication

MUSEUM VISITORS' PERCEPTIONS OF MOBILE GAMES: A CASE STUDY

Name: Sarah Exley Ozimek

Department: Communication

College: Liberal Arts

Degree: Master of Science in Communication & Media Technologies

Term Degree Awarded: Fall 2014 (2141 Semester)

Abstract

Previous research in mobile gaming focused on use among grade school students and heavy gamers (e.g., Groff, Howells, & Cranmer, 2010; Poels, Kort, & Ijsselsteijn, 2012), but little is known about museum visitor usage. This study examined museum visitors' mobile technology habits and perceived uses of mobile games in museums. A survey of individuals on a local museum's mailing list found a positive relationship between visitors' familiarity with mobile devices and their perceptions of enjoyment and learning experiences with mobile games. This indicates that mobile games may be a welcome addition to the museum experience for heavy users of mobile devices. Additionally, gratifications among respondents for intention to play mobile games at museums were categorized as information discovery, entertainment, and information quality.

Keywords: mobile games, museum games, museum mobile technology, visitor engagement, mobile learning

Table of Contents

Museum Visitors' Perceptions of Mobile Games: A Case Study

Many individuals have visited a museum at some time or another, whether as part of a school field trip, to gather with family, or to check out a new exhibit. As they house amazing artifacts and works of art, museums serve to further our learning and teach people new ways of thinking. Games have also played a large role in our lives, from childhood to adulthood, and serve a variety of entertainment and cognitive purposes. With the advent of mobile technology, games are now being played on mobile devices, such as cell phones, smartphones, and tablets. As of January 2014, 90% of American adults owned a cell phone, 58% of American adults owned a smartphone, and 42% of American adults owned a tablet computer ("Mobile Technology Fact Sheet," 2014). Flurry Analytics reported in 2011 that games make up 70 to 80% of all smartphone apps downloaded, and 26 million people spend at least 25 minutes every day playing mobile games on their phones (Burton, 2011). As a result of mobile technology permeating our lives, it is safe to say that mobile technology also has a presence in all institutions in which we learn, including museums. This opens the door for a study involving mobile games as learning tools in museums.

Hawkey (2004) explains the introduction of digital technology to museums as being key to offering a totally new learning experience, based on unlimited choice and freedom, where learners can select their own pathways and pacing. The first mobile museum learning experiences were in the form of tours, but museums have now added media and interactive elements. Rodley (2011) defines experiences in museums as "looking down" or "looking around," and mobile games are a great example of looking down experiences, in which they grab a user's attention and hold it for the duration of the game.

Mobile learning can take place through mobile games by accessing information and knowledge from devices that people are used to "carrying everywhere with them" and that they regard as "friendly and personal" (Gikas & Grant, 2013). Sharples (2000) stated, "Educational thinking and technological development have converged, so that they now form the preconditions needed for producing a new type of handheld learning environment" (p. 3). Mobile technology has enabled learning institutions to create new ways of teaching, new stimulated environments, and new ways of communicating with teachers and fellow learners around the world (Sharples, 2000).

Too, experiences with non-mobile technology such as online media or interactive computer exhibits encourage more visitor activity and communication, proving interactive technology to be a valued interpretive tool for museums. A National Endowment for the Arts finding stated that people who participate in the arts through electronic media are nearly three times as likely to attend live arts events as non-media participants. Media-based arts participation appears to encourage live arts attendance ("Creativity, Community," 2011). A study at the British Galleries found that 87% of people felt the presence of computer exhibits was beneficial, and among those visitors who did not use any of the interactive interpretation, 76% felt that the use of computer exhibits did not detract from the exhibit's atmosphere (Gammon & Burgh, 2008).

It is to a museum's benefit to gain a better understanding of visitor motivations for utilizing mobile technology at museums, or more specifically, mobile games, in order to make better decisions when it comes to implementing a mobile plan. Learning can be a fun experience by harnessing the motivational power of games, which many museums have already implemented through scavenger hunts, apps, and the like. There is a belief that "learning

through doing" in games such as simulations, acts as a powerful learning tool (Groff, Howells, & Cranmer, 2010).

Through the uses and gratifications paradigm, which examines how and why people select specific media to meet their needs or obtain specific gratifications, the present study will uncover visitor gratifications and intentions to use mobile games in museums (Lee, Goh, Chua, & Ang, 2010). The present study will also explore visitor perceptions of mobile games in museums, with a focus on enjoyment of mobile games and improvement of personal learning experience.

Literature Review

The following is a review of studies about mobile technology in learning institutions. The studies have been grouped into the following topics: *museum mobile technology*, *mobile learning*, *museum games*, *game-based learning*, and *uses and gratifications theory*. To start, an overview of museum mobile technology and mobile learning was needed to understand the different ways in which mobile technology can be employed at museums, and how the visitor can learn with mobile technology. In addition, an exploration of specific museum games as well as game-based learning was necessary in order to determine the benefit of games in a museum setting and how they can play a greater role in the visitor experience. Finally, the uses and gratifications theory was studied in order to provide a framework for understanding how and why visitors use mobile games in museums.

Museum Mobile Technology

Mobile devices are becoming more widely embraced and accepted in museums as tools to supplement an exhibit, to engage visitors, to communicate via social media, and even to help increase visitation rates. Vavoula, Sharples, Rudman, Meek, and Lonsdale (2009) stated "the

museum visit is an ideal context for learning by inquiry, allowing the student freedom to explore the environment, with active inquiry and engagement" (p. 287) and they found that students who used mobile technology were working with exhibits and asking questions about their relevance. Edwards and Schaller (2007) point out that games can have social dimensions that benefit museums by fostering positive attitudes about museums and creating fun destinations for meaningful learning. Even if the game isn't adopted immediately, it is these positive attitudes that cultivate good experiences for visitors, which is helpful in achieving greater visitation rates.

Mancini and Carreras (2010) found that "apart from the change in technology, there is a change in attitude, with visitors actively (rather than passively) seeking knowledge" (p. 60). Similarly, the Denver Art Museum polled their visitors regarding its mobile app, and visitors reported their preference for rich, meaningful, object-based content, so in addition to the app, the museum implemented a community-based website in which visitors were encouraged to register and log in ("Creativity, Community," 2011). With social media on the rise on mobile devices, actively participating in online communities can also help increase visitation and interaction for both new and recurring visitors, by sharing experiences with friends and family and spreading the word about exhibits.

Museum evaluator John Falk emphasizes that games of any kind can offer a great deal to informal learning organizations, by introducing players to museums' collections, immersing them in context-rich virtual worlds, encouraging them to acquire specific skills and knowledge (Falk, 1999). While there have been concerns expressed that technology can distract visitors from fully experiencing exhibits and collections, it has been shown that properly designed and appropriately applied mobile technology can actually be an aid, rather than a barrier, to conversation and social interaction, and can also increase visitors' engagement with other

exhibits (Gammon & Burgh, 2008). Moreover, mobile technology can provide visitors with control over content selection and freedom to move independently, while also allowing a joint experience with companions (Gammon & Burgh, 2008). This means in general, visitors using mobile technology can be selective about the content they wish to view and can do so at their own pace, allowing them the choice to decide whether or not to interact with an exhibit.

Mobile Learning

Mobile devices, since they are portable, can be utilized at the users' own time and pace and give users a feeling of ownership, or independence, with their own learning activity. Research into how people learn using technology, particularly children, has found that constant contact with mobile devices promotes a sense of ownership and encourages custom design and delivery of user interfaces and content (Looi et al., 2009). The fact that learning and collaboration can happen anywhere, anytime, is a unique feature that is unparalleled by other forms of digital learning (Looi et al., 2009). Learning via mobile technology is a powerful communication and teaching method that can be harnessed by museums to improve visitor learning experiences.

Gedik, Hanci-Karademirci, Kursun, and Cagiltay (2011) found that mobile learning, or "m-learning," has learning potential for students who use cell-phone based mobile technology. They determined that the "push" of mobile technology was the motivating factor for learners to start their work and, interestingly enough, was regarded as a strength over f2f (face-to-face) or online instruction (Saran, Seferoglu, & Cagiltay, 2009). This demonstrates the motivational strength of mobile technology when it comes to students' learning preferences. Similarly, Sung, Chang, Hou, and Chen (2009) found that students with a mobile device interacted with exhibits for a longer period of time than students without a mobile device. The results showed that using

a mobile device in a museum increased the amount of actual interaction between the visitors and exhibits. It was found that the adventurous nature of a story and problem-solving on the mobile device increased participants' motivation for learning since the participants paid more attention to the exhibits and tried to get more details to answer the questions (Sung, Chang, Hou, & Chen, 2009). The observation of increased motivation for learning and increased interaction time when given the opportunity to interact using mobile devices, compared to those students without mobile devices, is of relevance to the present study.

Gikas and Grant (2013) examined students' experiences with mobile devices integrated into higher education through a student focus group. Using mobile devices allowed for quicker access to information, better communication and content collaboration, increased methods of learning, and situated learning (Gikas & Grant, 2013). It was concluded that mobile devices can provide learners with opportunities to collaborate, discuss content with classmates and instructors, and create new meaning and understanding (Gikas & Grant, 2013). With the ability to customize content for mobile devices, it becomes possible to create an authentic experience for users that leads to increased understanding.

Likewise, mobile connectivity research suggests that the content delivered is more useful when it is personalized and collaborative as suggested by the social constructive learning model (Motiwalla, 2007). Mobile technology can both complement and add value to existing learning models such as the social constructive theory of learning, which states that a learner has to act and reflect in an environment (Motiwalla, 2007). This learning model is seen in museums and can be both facilitated and supported by employing mobile games in museums to enhance the visitors' learning experience.

Museum Games

A trial alternate reality game, or ARG, (interactive story which takes place in real life and real-time) was implemented at the Smithsonian American Art Museum (SAAM) called "Ghosts of a Chance," in which the community was encouraged to participate using Internet, phone, email, and in-person interaction (Goodlander, 2009). This trial eventually led to the development of an ongoing game at the SAAM, played with cell phone text messages and physical objects around the museum. It involved a series of clues and puzzles, but was no longer considered ARG as it did not have the same sense of real-time happenings. The game was very popular amongst teenagers and adults, and was not educational, but rather, encouraged visitors to think about art in a new, fun, and social way. The project allowed for the museum to think about how to take it a step further to continue engaging their visitors through innovative activities. As a result of their three-pronged approach to designing this game, the game developers and museum were able to finally create a game that met the needs of the growing visitor group who engage with mobile technology.

Schaller and Flagg (2013), a learning game designer and game evaluator, documented the experience of creating an iPhone/Android game for an exhibit at the Maryland Science Center. They reported that because "games require the museum visitor to also become a player in the game-world, they create significant design challenges to ensure a satisfying experience that enhances rather than distracts from the museum visit" (Schaller & Flagg, 2013). Designed for pre-teens, the game required visitors to collect cards throughout the Center by finding three-digit keycodes and answering multiple-choice questions to earn cards. The post-game evaluation determined that two-thirds of players felt using the game helped them enjoy the exhibit more, and almost all (88%) thought that using the game helped them learn more from the exhibit than

without the game (Schaller & Flagg, 2013). The reports from visitors are valuable to the present study as they were able to reflect on the mobile game's effect on personal enjoyment and learning experience.

Schroyen et al. (2009) proposed a framework for designing educational mobile games for young learners. Falk and Dierking (2000) said that when asked about their motivations for visiting a museum, most people indicate learning as the primary reason. After developing a mobile game that was targeted at schoolchildren ages 12-16 on a field trip, the study tested usability and whether or not the game achieved the desired results. Over 90% indicated that they liked the game, and this indicated that there was potential to increase the attractiveness of museum learning among this age group. Guidelines were then created for the design and involvement of the end user: (a) follow a user centered design process, (b) create game concepts that act as good learning environments, (c) design for social interaction, and (d) value the graphical design of the user interface (Schroyen et al., 2009).

Overall, by studying games that museums have deployed and tested, parallels can be drawn between all to determine what works, what doesn't work, and ultimately, how visitors perceive the games to improve their personal museum experience. Too, since learning is such a large motivator for visiting museums, it is necessary to explore additional studies that reveal the impact of games on learning.

Game-Based Learning

Falk (1999) describes games as creating a sustained learning experience that challenges players, inspires curiosity, and engages the imagination. Looking at digital games through the eyes of students is useful for understanding why and how they may be beneficial in learning environments, such as museums. Groff, Howell, and Cranmer (2010) identified the educational

benefits of console game-based learning in primary and secondary schools in Scotland, where students enthusiastically reported that game-based learning is a refreshing addition to the learning experiences that they were presented with in school.

In the study, students responded positively on the increased connections in learning, greater collaboration and teamwork, the student-driven nature of the projects, and the perceived increase in understanding of the content covered through game-based learning, as well as increased concentration, focus, creativity, communication, organization and so on (Groff et al., 2010). Overall, it was found that students preferred game-based learning over other learning methods, while advocating that it be used in balance with other approaches. These findings convey that games may very well be a welcome addition to learning environments by students as long as additional teaching methods are employed.

In order to draw parallels between student experiences vs. gamer experiences, it's important to look at studies that have examined and categorized these experiences. Poels, Kort, and Ijsselsteijn (2012) conducted focus group interviews to find out how prominent specific experiences are during typical, everyday sessions of game play, how different experiences are interrelated, and how they are dependent on specific contexts, modalities, and different types of players. They categorized the digital game experiences, which included fun, amusement, relaxation, imaginative immersion, sensory immersion, freedom to explore/control, concentration, tension, being in the zone, irritation, disappointment, frustration, anger, negative experiences turning into positive ones, and connectedness with other players (Poels, Kort, & Ijsselsteijn, 2012). This feedback, which encapsulates the game experience from a gamer's point of view, offers many useful insights that may align with the perspectives of a prospective learner (or museum visitor).

Through games, visitors can not only learn more about exhibits, but they can also come away with a new way of analyzing the world around them. Shaffer, Halverson, Squire, and Gee (2005) studied this theory with video games and suggest that video games matter because they present players with simulated worlds; worlds that, if well-constructed, are not just about facts or isolated skills, but embody particular social practices. They also argue that video games make it possible for players to participate in valued communities of practices and as a result develop the ways of thinking that organize those practices (Shaffer, Halverson, Squire, & Gee, 2005). Epistemic games, through situated learning, give players freedom to act within the norms of a valued community of practice and transfer ideas from one context to another-as a result, through video games, students develop a new way of thinking and see the world in a new way (Shaffer et al., 2005). Theories like these can help museums decide what type of game would apply best to their museum audience, based on objectives and goals.

Well thought-out museum game objectives can contribute to a solid mobile game design that benefits both the museum and its visitor. When building games for museums, clarity in game objectives leads to better design (Birchall, Burch, Evans, & Goldman, 2012). Some common objectives for museum games include increasing brand awareness for the museum, enticing non-visitors to come to the museum, engaging players with museum themes or collections, encouraging visitors to the museum to familiarize themselves with the institution and exhibitions, deepening enjoyment at the museum, deepening observation of the collections and exhibition subject matter, and changing visitor behavior in some way (Birchall et al., 2012).

As already mentioned, enjoyment is one of many museums' objectives for visitor experience, so it is also critical to examine player enjoyment of games for the purposes of this study. Sweetser and Wyeth (2005) developed a framework for evaluating player enjoyment in

games. A follow-up study created a modified scale of the elements Sweetser and Wyeth used and employed these dimensions in four learning games as part of a university's online learning course (Fu, Su, & Yu, 2009). These dimensions included immersion, social interaction, challenge, goal clarity, feedback, concentration, control, and knowledge improvement (Fu et al., 2009). The results of the follow-up study determined that this measurement is an effective tool in evaluating player enjoyment of e-learning games, and therefore, is extremely relevant in the present study as a measurement of visitor enjoyment with museum mobile games.

Uses and Gratifications Theory

The uses and gratifications theory is an effective approach to get a closer look at visitors' motives and behaviors for mobile game use in museums. Early uses and gratifications studies sought to form categorizations that classified participants' responses to media (Ruggiero, 2000). Cantril (1942) pointed out that this approach was developed to be able to study the gratifications that attract audiences to certain types of media and content which satisfied their social and psychological needs. Determining uses and gratifications allows researchers to understand motivations for consuming media, or other types of content. The ubiquity of mobile technology in today's society provides another source of media content that has been widely researched.

Leung and Wei (2000) developed a uses and gratifications perspective to better understand how people use mobile phone technology. They determined that mobility, immediacy, and instrumentality, followed by affection and sociability, were the strongest motives among users for predicting phone use. Williams (1985) explained that uses and gratifications theory was applied to traditional mass media research in the past, but presently, can also be applied to new technology research. Wu, Wang, and Tsai (2010) researched and developed a theoretical framework to investigate antecedents for game players' stickiness with

online games. This framework included achievement, enjoyment, and social interaction as major initiative motivations, aka, gratifications, which refers to the extent in which players' motivations are satisfied based on their initial experiences (Wu, Wang, & Tsai, 2010).

In addition, Lee, Goh, Chua, and Ang (2010) identified a grouping of perceived gratifications (*information quality*, *information discovery*, *escape, sociability*, *leisure*, and *entertainment*) based on constructs from past uses and gratification studies and applied these to a study involving mobile content sharing and gameplay. These gratifications are relevant to the present study as they are similar to results found in prior studies for self-reported benefits of mobile games in learning environments. Lee et al. (2010) defined the perceived gratifications as follows:

- Information discovery: the application helps retrieve information quickly and efficiently
- Information quality: the information retrieved is credible and of good quality
- Escape: the application helps users stop thinking about life issues
- Socialization: interaction and socialization with others can be supported
- Leisure: the application promotes relaxation and eases boredom
- Entertainment: enjoyment may be derived from using the application. (p. 20)

After a closer look at museum mobile technology, mobile learning, museum games, and game-based learning, it has been determined that games can foster learning in museums through a variety of ways, and with a new approach, more information can be uncovered about visitors and their intentions for mobile game use. The ability for people to selectively choose/consume content is a key element of the uses and gratifications approach. There is a need for research into the ways in which mobile games can aid this content retrieval, through the lens of uses and

gratifications theory. Without further investigation, it is difficult to fully evaluate the perceptions of visitors about mobile games as part of the museum experience.

Research Questions

Research shows that game-based learning can be successful and that learners do respond positively to it; however there is a lack of research on the specific application of mobile games in a museum setting and the visitor perspective on the subject. The purpose of the present study is to seek out if mobile games (i.e., games played on a mobile device such as a smartphone or tablet), would be beneficial in a museum environment, utilizing, the Memorial Art Gallery (MAG) in Rochester, NY. The MAG was selected for this case study because it was local to the present researcher and is a university-affiliated art museum that also serves as a community art museum, serving as a good foundation for both learning and community enjoyment. The impetus for this research is to benefit the MAG, as well as other museums, galleries, or cultural organizations, so that the visitor perspective on mobile gaming can be better understood and therefore, mobile technology objectives can be better outlined. The following questions were developed in order to help attain this information.

Research Question 1: What gratifications do MAG visitors perceive will be fulfilled by playing a mobile game at the MAG?

Research Question 2: Is there a relationship between MAG visitors' self-reported familiarity with mobile gaming and their perceived level of enjoyment with a mobile game at the MAG?

Research Question 3: Is there a relationship between MAG visitors' self-reported familiarity with mobile gaming and their perception that a mobile game will improve their learning experience at the MAG?

Method

Participants

The survey participants included MAG visitors and non-visitors, as well as supporters, members, friends, and colleagues of the MAG. The survey garnered responses from 303 participants, however, three participants declined to participate and ended the survey early. Most of the participants were female (females 72%, males 28 %) and participants' ages ranged from 18-24 to over 75 with a mean age range of 45-54 (*SD* = 1.5). All participants had some college education, with the highest level of completed education among participants being a graduate degree (42.9%).

Procedure

After receiving approval from the Human Subjects Research Office at the Rochester Institute of Technology, an online survey was distributed to participants as part of a larger study at the Memorial Art Gallery in Rochester, NY. The survey consisted of basic demographic questions and scaled questions. The survey was emailed to a convenience sample of subscribers to the MAG email list (9,491 email addresses), and the email contained an introduction to the study, a link to the survey, and incentives for participating (MAG-related prizes). This sample method garnered the majority of responses. The survey was subsequently posted to Facebook and similar social media, as well as emailed to individual people who were interested in participating.

Design

The survey instrument began with an informed consent section notice, to which participants had to select "agree" or "disagree" before participating. If a participant selected "disagree," the survey ended automatically. Responses were collected anonymously. The survey

instrument contained a series of scales to measure museum visitors' uses and gratifications for mobile gaming, familiarity with mobile gaming, level of enjoyment with mobile games at the MAG, and perceptions that a mobile game will improve their learning experience at the MAG. Finally, the survey asked about mobile device usage, along with basic demographic information, such as age, gender, and education level.

Gratifications for playing a mobile game at the MAG were operationalized by creating the statement, "I would play a mobile game at the MAG . . .," and subsequently listing 16 different gratifications for playing a mobile game at the MAG. Respondents were asked to rate their degree of agreement with each statement on a seven-point interval scale, from 1 (*strongly disagree*) to 7 (*strongly agree*). One example of a statement is, "I would play a mobile game at the MAG to get information about a MAG exhibit," which is categorized as information discovery. The statements were modified versions of information discovery, socialization, leisure, escape, and information quality gratifications developed in the research conducted by Lee et al. (2010). (The full survey instrument used in the present study can be found in the Appendix.)

The variable of familiarity with using mobile phones was operationalized in order to get an understanding of the respondents' familiarity with phones on basic and advanced levels. The survey question was stated as "How familiar are you with using . . .," and listed 10 basic and advanced features to rate. For example, the question would read, "How familiar are you with using your mobile phone to talk," and respondents were asked to rate their responses on a five-point Likert-type scale, from 1 (*not at all familiar*) to 5 (*extremely familiar*). Basic features included talking on the phone, texting, taking pictures, and listening to music. Advanced features included engaging in social media, surfing the web, playing a game through a downloaded app,

playing a game on a mobile web browser, playing a game built onto a phone's operating system, and participating in a texting-based game or scavenger hunt.

Enjoyment with mobile games at the MAG was operationalized as a variable through Sweetser's and Wyeth's (2005) framework on user enjoyment of e-learning games. The survey question was phrased as "I would enjoy a mobile game at the MAG if . . .," and eight statements were subsequently listed that respondents rated on a seven-point interval scale from 1 (*strongly disagree*) to 7 (*strongly agree*). For example, "I would enjoy a mobile game at the MAG if I can become completely immersed in the mobile game," was linked to *immersion* in a modified version of Sweetser's and Wyeth's framework (Fu et al., 2009). Additional categories connected to the statements included concentration, goal clarity, feedback, challenge, autonomy, social interaction, and knowledge improvement.

Perceptions that mobile games will improve learning experience at the MAG were operationalized by observations reported in the research conducted by Groff et al. (2010). The question read "I think a mobile game would improve my learning experience at the MAG because . . ." and respondents were asked to rate their responses for nine different statements on a seven-point interval scale from 1 (*strongly disagree*) to 7 (*strongly agree*). For example, "I think a mobile game would improve my learning experience at the MAG because I enjoy a challenge while using my phone," or "I think a mobile game would improve my learning experience at the MAG because I am motivated to learn on my mobile phone."

Results

RQ1

To address RQ1, which asks about the gratifications MAG visitors perceive will be fulfilled by playing a mobile game at the MAG, a composite scale index was created for each

gratification statement listed in the survey instrument. The results, as seen in Table 1, show the gratifications, mean, standard deviation, percentage of highest agreement, and type of gratification.

In order of strength of agreement, there were six types of gratifications listed: information discovery (4), entertainment (3), information quality (2), escape (2), leisure (3), and socialization (2). Information discovery (51%), entertainment (46%), and information quality (45%) were among the three highest motivations for playing mobile games. The highest percentages for disagreement among respondents for mobile game play were escape (59%), leisure (58%), and socialization (51%). In terms of agreement vs. disagreement, while the results were not strong, it is interesting to note which gratifications were of most importance to visitors.

Table 1

Survey Results for RQ1

Gratifications	Mean	Standard Deviation	Highest % of Agreement	Type of Gratification
To get information about a MAG exhibit	4.21	1.95	51	Information Discovery
Because it would be entertaining	3.93	1.89	46	Entertainment
Because I know the game's information would be accurate	4.17	1.88	45	Information Quality
Because I could access the mobile game anytime, anywhere	4.03	1.88	44	Information Discovery
Because it would be more convenient than paper material	3.95	1.90	42	Information Discovery
Because I would trust the game's content and information	4.08	1.83	42	Information Quality
Because it would be easy to play on my phone	3.77	1.76	36	Information Discovery
Because it is a pleasant break from routine	3.52	1.77	35	Escape
Because it would help my kids become engaged	3.78	1.83	32	Entertainment
Because it could be relaxing	3.48	1.70	30	Leisure
Because I could interact with people while playing	3.48	1.74	28	Socialization
Because it would be exciting	3.42	1.66	28	Entertainment
Because it could help me pass time	3.38	1.71	27	Leisure
Because I could share my results with friends	3.26	1.67	22	Socialization
Because it could help combat boredom	3.08	1.63	21	Leisure
To get away from pressures and responsibilities	2.94	1.57	18	Escape

RQ2

RQ2 asks if there is a relationship between MAG visitors' self-reported familiarity with mobile gaming and their perceived level of enjoyment with a mobile game at the MAG. Cronbach's alpha tests were run in order to measure the internal consistency of familiarity (α = .929) and enjoyment (α = .977). A Pearson correlation coefficient was calculated to test for a relationship between MAG visitors' self-reported familiarity with mobile gaming (M = 33.81; SD = 11.53) and their perceived level of enjoyment with a mobile game at the MAG (M = 33.57; SD = 14.57). A strong positive correlation was found, r(274) = .414, p < .001), indicating a significant relationship between familiarity and enjoyment. As the level of familiarity with mobile devices increases, museum visitors' perceived level of enjoyment with a mobile game increases. This suggests that if visitors use their mobile devices frequently, they are more likely to enjoy a mobile game.

RQ3

RQ3 asks if there is a relationship between MAG visitors' self-reported familiarity with mobile gaming and their perception that a mobile game will improve their learning experience at the MAG. Cronbach's alpha tests were run in order to measure the internal consistency of familiarity (α = .929) and learning (α = .969). A Pearson correlation coefficient was calculated to test for a relationship between MAG visitors' self-reported familiarity with mobile gaming (M = 33.81; SD = 11.53) and their perception that a mobile game will improve their learning experience at the MAG (M = 33.83; SD = 15.11). A strong positive correlation was found, r(274) = .518, p < .001), indicating a significant relationship between familiarity and learning experience. As the level of familiarity with mobile phones increases, so do the museum visitors' perceptions that a mobile game will improve their learning experience at the MAG. Similar to

RQ2, this implies that the more visitors use their mobile devices, the more likely it is that visitors will assume a mobile game to play a positive role in the learning aspect of their museum visits.

Discussion

The present study's goal was to examine the perceptions of mobile games among museum visitors with respect to enjoyment and learning experience, and also to determine the possible gratifications for using mobile games in museums. This was an exploratory study for the Memorial Art Gallery, the results of which could potentially feed the development of a game at the MAG or other museum. The results of the study produced several significant outcomes in response to the research questions presented.

While none of the research questions proposed had very strong responses, the gratifications results, as seen in Table 1, show where the priorities of visitors lie in terms of mobile game usage. The gratification with the highest percent of agreement among survey respondents, and a mean of 4.212 was "To get information about a MAG exhibit," as an information discovery type of gratification. The second most-agreed upon gratification with a 46% rating was "Because it would be entertaining," as an entertainment type of gratification. The third highest agreement percentage, at 45% was "Because I know the game's information would be accurate," as an information quality gratification. Out of six gratification types, information discovery, entertainment, and information quality were the most significantly influential to museum visitors for intention to use. This aligns with the research conducted by Lee et al. (2010) who found that information discovery, entertainment, and information quality (in order of strength of association) were also the most positive for intention to use among their respondents. In terms of game design, designers could benefit from these results by incorporating new features into games that are based on these significant perceived gratifications.

In contrast, escape, leisure, and socialization were of least importance to the respondents with disagreement percentages of 59%, 58%, and 51%, respectively. The statements that were classified by these gratification types included "To get away from pressures and responsibilities," "Because it could help combat boredom," and "Because I could share my results with friends." The feelings reported in the escape and leisure categories are consistent with observations reported by exclusive gamers in previous studies, which suggests gamers frequently play games for escape and leisure reasons, however, the results show that museum visitors would not. The socialization result is interesting to note as Groff et al. (2010) found their subjects to be interested in the teamwork and collaboration, however, the present study's respondents did not report as such. This discrepancy is likely due to the present study's subjects' difference in age and education level, as the aforementioned study's subjects were students from primary and secondary schools.

With respect to familiarity with mobile devices, there was a significant level of familiarity in the basic features [using your mobile phone to talk, to communicate with others using short message service/multimedia messaging service (SMS/MMS), to take pictures or video] with a mean of 4.04. In contrast, there was a lower level of familiarity with advanced features (using your phone to engage in social media, surf the web, play a game through a downloaded app, play a game on a mobile web browser, play a game built into your phone's operating system, participate in a text-based game or scavenger hunt) with a mean of 2.94. This suggests that while overall, visitors are familiar with their mobile devices, there are varying levels of familiarity among the respondents. As a result of these differences in feature familiarity, it becomes possible to discern those who would enjoy a mobile game from those would not.

However, there was a positive relationship between MAG visitors' self-reported familiarity with mobile gaming and their perceived level of enjoyment with a mobile game at the MAG. Respondents reported their familiarity with mobile phones and gaming, and the more familiar they were, the more likely they felt they would enjoy a mobile game at the MAG. Several of the stronger-rated reasons for enjoying a mobile game were "If the mobile game increases my knowledge," "If the mobile game grabs my attention," "If the mobile game provides different levels of challenges that tailor to different players," and "Overall mobile game goals are presented in the beginning of the mobile game." With the number of people using mobile technology and games rapidly rising, this suggests that most people who visit a museum that are highly familiar with their mobile devices would likely enjoy a mobile game. This also characterizes those users who reported a higher level of familiarity with only basic features on their mobile devices as not likely enjoying a mobile game.

The findings also present a significant positive relationship between familiarity with mobile gaming and perceptions that a mobile game will improve their learning experience. To summarize, the more familiar respondents were with their mobile devices and mobile gaming, the more they felt a mobile game would improve their learning experience. Some of the stronger reasons, as reported by respondents, for perceiving a game to improve their learning experience include "My mobile phone helps me learn quickly," "I enjoy visuals and multimedia on my mobile phone," "I am motivated to learn on my mobile phone," and "I like to be creative while using my mobile phone." In the research conducted by Groff et al. (2010), it was revealed that mobile games were a welcome method of learning, in balance with other more traditional processes. Similarly, results from the present study indicate that museum visitors are open to the

idea of mobile games as an aid to their learning experience as long as they are familiar with their mobile devices on a more advanced level.

These findings are important for the MAG and perhaps other museums that are considering implementing mobile games, and want to understand the visitor perspective of mobile games, to better assist in the design and planning of a successful mobile game. The most important features when considering the design or objectives of a mobile game (for the best visitor experience) should satisfy the information discovery, entertainment, and information quality gratifications of visitors. These gratifications, in a game, could translate to sleek search functions, a "fun" element for entertainment, and high-quality presentation of information.

Respondents strongly disagreed with the escape, leisure, and socialization gratification types for intention to use, however these types cannot be discounted from the design of a mobile game or development of game objectives, as the results were not highly significant. The uses and gratifications approach to this research did help to seek an understanding of the "how" and "why" museum visitors engage with content through mobile games with respect to enjoyment and learning. The self-reported perceptions that they will enjoy a mobile game and that games will improve their learning experience can assist in the formation of clearly communicated game goals and objectives. Finally, museums can assume that the more their visitors are familiar with their own mobile devices, the more they will enjoy a mobile game that is tailored to their needs, and they will likely play it for learning purposes.

Limitations and Future Research

Although the present study's findings conclude that familiarity with mobile devices is linked to positive perceptions of mobile gaming, there is still a gap that exists. Age is a significant gap as the survey instrument was not open to participants under the age of 18. As

much of the studies in the review of literature focused on grade school environments for mobile learning, it would be appropriate to develop a framework geared towards a younger population, so museums can target all age groups. Gender is another limitation of the study as 72% of the respondents were female; future research could have a more even distribution of gender. In addition, while all of the respondents had heard of the MAG and most were visitors, not all of them had actually visited in person. It would be relevant to hear exclusively from visitors who have been to the museum in person and interacted with MAG exhibits, in order to conduct a true case study.

Lastly, because there was no actual game that respondents played to report their experiences on, they simply had to hypothesize a game that they would play at the MAG, and this could have affected respondents' ability to answer accurately. In the future, it is recommended that a game be developed for museum visitors, and a survey be subsequently distributed for the most accurate perceptions of mobile games. This method could include in-depth interviews or focus groups in order to glean original observations from the eyes of a museum visitor, as opposed to students. For museums, new research will lead to better game design in the future as well as more informed decision-making for mobile game implementation as part of a museum's educational and engagement plans.

Conclusion

Previous research has shown the uses and gratifications approach to be a useful tool when examining mass media, including mobile technology, however less attention has been given to mobile game usage in the specific setting of museums. Overall, the study provided insight into how museum visitors use and perceive mobile games. The gratification types, information discovery, entertainment, and information quality, were uncovered as primary motivations for

intentions to use mobile games among museum visitors. Additional findings showed that visitors who were familiar with their mobile devices, based on self-reported levels of feature familiarity, felt they would be more likely to enjoy a mobile game. Lastly, museum visitors who were familiar with their mobile devices felt their learning experiences would be improved by a mobile game. This indicates that mobile games are welcome by mobile users and that games can have a place in a museum without the worry that they will distract visitors from exhibits.

While there were significant relationships between the variables in RQ2 and RQ3, the results are inconclusive until replicated on a sample group that has played an actual game on which they can report. With the pervasiveness of mobile technology as part of everyday life, the uses and gratifications approach helps to seek the "how" and "why" behind mobile game use among visitors, and the findings with more in-depth future studies can help improve the game design/objectives and communication with visitors going forward. Further, the information garnered from this study can feed the work of designers as they create mobile games for visitors at all types of museums in the future.

References

Birchall, D., Henson, M., Burch, A., Evans, D., & Goldman, K. H. (2012, March 24). Levelling Up: Towards Best Practice in Evaluating Museum Games. Retrieved from Museums and the Web 2012 website: http://www.museumsandtheweb.com/mw2012/papers/levelling_up_towards_best_practice_in_evaluati.html

Burton, J. (2011, August 5). Playful Apps. Retrieved December 17, 2013, from http://mobileappsformuseums.wordpress.com/2011/08/05/playful-apps/

Cantril, H. (1942). Professor quiz: A gratifications study. In P. F. Lazarsfeld & F. Stanton (Eds.), *Radio Research 1941* (pp. 34–45). New York: Duell, Sloan, & Pearce.

Creativity, Community and a Dash of the Unexpected; Adventures in Engaging Young Adult Audiences. (2011). Retrieved December 15, 2013, from http://www.denverartmuseum.org/sites/all/themes/dam/files/final_report_to_the_field_1.16.2012_final.pdf

Edwards, S., & Schaller, D. (2007). "The Name of the Game: Museums and Digital Learning Games." The Digital Museum: A Think Guide. Washington, DC. 97-105.

Falk, J. (1999). "Museums as Institutions for Personal Learning." *Daedalus, 128. No. 3.* 259-279.

Falk, J., & Dierking, L. (2000). *Learning from Museums: Visitor Experiences and the Making of Meaning*. Walnut Creek: Altamira Press.

Fu, R., Su, R., & Yu, S. (2009). EGameFlow: A scale to measure learners' enjoyment of e-learning games. *Computers & Education.* Volume 52, Issue 1, 101-112.

Gammon, B., & Burgh, A. (2008). "Designing Mobile Digital Experiences." Digital Technologies and The Museum Experience. Lanham, MD. 35-52.

Gedik, N., Hanci-Karademerci, A., Kursun, E., & Cagiltay, K. (2012). Key instructional design issues in a cellular phone-based mobile learning project. *Computers & Education, 58,*1149-1159. doi: 10.1016/j.compedu.2011.12.002

Gikas, J., & Grant, M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *Internet and Higher Education, 19*, 18-26.

Goodlander, G. (2009, March 31). Fictional Press Releases and Fake Artifacts: How the Smithsonian American Art Museum is Letting Game Players Redefine the Rules. Retrieved August 1, 2014 from: http://www.archimuse.com/mw2009/papers/goodlander/goodlander.html

Groff, J., Howells, C., & Cranmer, S. (2010). The impact of console games in the classroom: Evidence from schools in Scotland. *Futurelab.* Retrieved February 1, 2014 from: http://archive.futurelab.org.uk/resources/documents/project_reports/Console_Games_report.pdf

Hawkey, R. (2004). Learning with Digital Technologies in Museums, Science Centres and Galleries. *Futurelab*. Retrieved August 1, 2014, from: http://archive.futurelab.org.uk/resources/documents/lit_reviews/Museums_Galleries_Review.pdf

Ho, H., & Syu, L. (2010). Uses and Gratifications of Mobile Application Users. *2010 International Conference on Electronics and Information Engineering*, 317.

Lee, C. S., Goh, D. H., Chua, A., & Ang, R. P. (2010). Indagator: Investigating perceived gratifications of an application that blends mobile content sharing with gameplay. Journal of the American Society for Information Science and Technology 61(6), 1244-1257.

Leung, L., & Wei, R. (2000). More than just talk on the move: Uses and gratifications of the cellular phone. *Journalism and Mass Communications Quarterly*, *77(2)*, 308.

Looi, C., Wong, L., So, H., Seow, P., Toh, Y., Chen, W., . . . Soloway, E. (2009). Anatomy of a mobilized lesson: Learning my way. *Computers & Education, 53*, 1120-1132. doi: 10.1016/j.compedu.2009.05.021

Mancini, F., & Carreras, C. (2010). Techno-society at the service of memory institutions: Web 2.0 in museums. *Catalan Journal of Communication & Cultural Studies, 2,* 59-76. doi: 10.1386/cjcs.2.1.59_1

Mobile Technology Fact Sheet (Pew Research Centers Internet American Life Project RSS). (2014). Retrieved June 15, 2014, from http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/

Motiwalla, L. (2007). Mobile learning: A framework and evaluation. *Computers & Education, 49*, 581-596. doi: 10.1016/j.compedu.2005.10.011

Poels, K., Kort, Y., & Ijsselsteijn, W. (2012.) Identification and Categorization Of Digital Game Experiences: A Qualitative Study Integrating Theoretical Insights And Player Perspectives. *Westminster Papers*, *9.*

Rodley, E. (2011). Looking Around vs. Looking Down: Incorporating Mobility into your Experience Design. *American Alliance of Museums*. Retrieved August 1, 2014 from: http://mobileappsformuseums.wordpress.com/2011/08/05/looking-around-vs-looking-down-incorporating-mobility-into-your-experience-design/

Ruggiero, T. (2000). Uses and Gratifications Theory in the 21st Century. *Mass Communication & Society, 3*, 3-37.

Saran, M., Seferoglu, G., & Cagiltay, K. (2009). Mobile assisted language learning: English

pronunciation at learners' fingertips. *Eurasion Journal of Educational Research., 34,* 97-114.

Schaller, D., & Flagg, B. (2013, January 31). Playtesting PlanetMania: A Mobile Game for Museum Exhibits. Retrieved August 1, 2014: http://mw2013.museumsandtheweb.com/paper/playtesting-planetmania-a-mobile-game-for-museum-exhibits/

Schroyen, J., Luyten, K., Gabriels, K., Robert, K., Teunkens, D., Coninx, K., . . . Manshoven, E. (2009, March 31). The Design of Context-Specific Educational Mobile Games. Retrieved August 1, 2014 from: http://www.archimuse.com/mw2009/papers/schroyen/schroyen.html

Shaffer, D., Halverson, R., Squire, K., & Gee, J. (2005). Video Games and the Future of Learning. *Wisconsin Center for Education Research*.

Sharples, M. (2000). The Design of Personal Mobile Technologies for Lifelong Learning. *Computers & Education, 34*, 177-193.

Sung, Y., Chang, K., Hou, H., & Chen, P. (2010). Designing an electronic guidebook for learning engagement in a museum of history. *Computers in Human Behavior, 26*, 74-83. doi: 10. 1016/j.chb.2009.08.004

Sweetser, P., & Wyeth, P. (2005). Gameflow: A model for evaluating player enjoyment in games. *ACM Computers in Entertainment,* Volume 3, Issue 3.

Vavoula, G., Sharples, M., Rudman, P., Meek, J., & Lonsdale, P. (2009). Myartspace: Design and evaluation of support for learning with multimedia phones between classrooms and museums. *Computers & Education, 53*, 286-299. doi: 10.1016/j.compedu.2009.02.007

Williams, F., Philips, A. F., & Lum, P. (1985). "Gratifications associated with new

communication technologies." *Rosengren, K. E.*

Wu, J., Wang, S., & Tsai, H. (2010). Falling in love with online games: The uses and gratifications perspective. *Computers in Human Behavior, 26,* 1862-1871.

Appendix

Survey Instrument

Memorial Art Gallery Survey

ELECTRONIC CONSENT:

1. Please select your choice below.

Clicking on the "agree" button below indicates that:

* you have read the above information

* you voluntarily agree to participate

* you are at least 18 years of age

If you do not wish to participate in the research study, please decline participation

by clicking on the "disagree" button.

- o Agree
- o Disagree

1. Do you own a mobile device?

- o Yes
- o No

2. What type of mobile device do you own? (check all that apply)

- o Feature Phone (a cell phone without a data plan or access to an app market)
- o Smartphone
- o Tablet
- o iPod or other MP3 player
- o Other

11. I would play a mobile game at the MAG: (Part 1 of 2)

To get information about a MAG exhibit

- o Strongly Agree
- o Agree Somewhat
- o Agree
- o Neither Agree or Disagree
- o Somewhat Disagree

- Disagree
- Strongly Disagree

Because it would be easy to play on my phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it would be more convenient than paper material

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because I could access the mobile game anytime, anywhere

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because I could interact with people while playing

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree
-

Because I could share my results with friends

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it could help me pass time

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it could help combat boredom

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it could be relaxing

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it would help my kids become engaged

- Strongly Agree
- Agree Somewhat
- Agree

- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

12. I would play a mobile game at the MAG:

(Part 2 of 2)

To get away from pressures and responsibilities

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it is a pleasant break from routine

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because I would trust the game's content and information

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because I know the game's information would be accurate

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree

- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it would be exciting

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Because it would be entertaining

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

13. How familiar are you with using:

Your mobile phone to talk

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to communicate with others using SMS/MMS

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to take pictures or video

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to listen to radio/music

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to engage in social media

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to surf the web

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to play a game through an app you downloaded

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to play a game on a mobile web browser

- Extremely Familiar
- Very Familiar

- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to play a game built into your phone's operating system

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

Your mobile phone to participate in a texting-based game or scavenger hunt

- Extremely Familiar
- Very Familiar
- Moderately Familiar
- Slightly Familiar
- Not at all Familiar

14. I would enjoy a mobile game at the MAG if:

The mobile game grabs my attention

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Overall mobile game goals are presented in the beginning of the mobile game

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I receive feedback on my progress throughout the mobile game

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

The mobile game provides different levels of challenges that tailor to different players

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I feel a sense of control over the mobile game

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I can become completely immersed in the mobile game

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

The mobile game supports communities or social interaction between players

- Strongly Agree
- Agree Somewhat
- Agree

- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

The mobile game increases my knowledge

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

15. I think a mobile game would improve my learning experience at the MAG because:

I enjoy a challenge while using my phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

Mobile games pique my curiosity

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I am interested in the interactive aspect of mobile games

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree

- Strongly Disagree

I enjoy visuals and multimedia on my mobile phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I want to share or collaborate with others on my mobile phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I like to concentrate to achieve something on my mobile phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I like to be creative while using my mobile phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

My mobile phone helps me learn quickly

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

I am motivated to learn on my mobile phone

- Strongly Agree
- Agree Somewhat
- Agree
- Neither Agree or Disagree
- Somewhat Disagree
- Disagree
- Strongly Disagree

18. What is your age?

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75+

19. What is your gender?

- Male
- Female

20. Which best describes your highest level of completed education?

- High school (includes GED, high school equivalent)
- Some college (no degree received)
- 2-year college/ technical school/ associates degree
- College graduate
- Some graduate school
- Graduate degree
- Doctorate degree

21. For eligibility to be entered to win a MAG travel mug, Family membership or Gallery Store Gift Certificate please enter your email address below so we can contact you if you win. This will only be used to contact you to notify you if you have won a prize. Your email address will not be used for any other purpose.

END OF SURVEY