## From Visitor to Viewer: Designing Interactive Guides to Enhance Museum Engagement

Heather Hughes Education Technology Services Pennsylvania State University, USA hhughes@psu.edu

Nicholas Smerker Education Technology Services Pennsylvania State University, USA njs177@psu.edu

**Abstract:** The Palmer Museum of Art at The Pennsylvania State University has an exemplary record of providing teaching about and around art to a diverse community of visitors, yet has reached a gap between traditional institutional education and the technology-mediated learning experiences expected by today's audiences. Designers in Education Technology Services at the University aim to bridge that gap by creating a mobile, interactive guide to the museum for visitors. The guide is developed using Apple's free iBooks Author platform and approachable iPad mini devices, with iterative design informed by assessment. This paper discusses various aspects related to the ongoing development of the guide, including design challenges, the solution prototype, and museum visitor experience feedback, along with design implications and future directions.

#### Introduction

The Palmer Museum of Art is both a nationally recognized arts institution and an informal learning space. Located at Penn State University's University Park campus, the museum serves a diverse community of more than 46,000 students and 15,000 faculty and staff as well as numerous campus visitors. The museum's mission is to serve as a cultural resource for the University community and the 155,000 residents of the surrounding Centre county region.

While the Palmer Museum serves as an exemplary traditional teaching space around its extensive collection of fine art, a growing gap has developed between the technology-mediated learning experiences its diverse audience has come to expect outside the museum and the decidedly low-tech opportunities for exploration available inside the museum. In collaboration with the museum and the eLearning Institute of the College of Arts and Architecture, Education Technology Services at Penn State is creating an interactive guide for museum visitors using the iBooks platform on iPad minis.

The guide is designed to be familiar and enticing to visitors, while both enhancing and deepening their interaction with the works of art on display. The design of the museum guide will leverage existing museum resources including high-resolution images representing works in the permanent collection, as well as audio recordings, wall texts, and curatorial expertise, which add context and depth to these works.

The guide will offer self-paced, curated tours of the museum's permanent collection that allow visitors to explore the art more deeply than they would during a casual visit. Development of the project includes the use of a baseline survey to determine visitor demographics and usage patterns prior to the guide's launch, as well as comparison of visitor engagement data collected after the guide is available. Feedback from the survey will also inform the development of additional guide functionality, and the iBooks platform will enable museum staff to maintain the guide through the user-friendly iBooks Author application, further expanding available opportunities for visitor interaction in future iterations of the design.

### **Guide Design**

**Design Challenges** 

Several major design challenges were considered in conceiving of the presentation for an interactive guide to the museum's permanent collection. These challenges included the protection of copyright, ease of use for visitors, simple maintenance by the museum, cost effectiveness, and assessment.

*Copyright:* Of primary concern was the protection of the copyrighted reproductions of works in the museum. Some platforms considered required that content be delivered from a server to the user, meaning that materials would need to be uploaded to a third party host which was deemed unacceptable due to risks associated with distributing high resolution files. Conversely, other platforms evaluated for the guide would require that content be pushed down directly to the visitors' own devices, effectively providing each individual with a high-resolution digital copy of every work's reproduction.

*Ease of Use:* The Palmer Museum of Art serves a diverse audience, including undergraduate and graduate students (either in or outside of arts programs), faculty from across many disciplines, University staff, alumni, families of all of the above, as well as the general public. Because of this diversity, any solution chosen for delivering guide content had to be immediately familiar and accessible to as many visitors as possible. Likewise, recognition of the fact that ongoing upkeep of guide content would fall squarely to the Palmer Museum staff necessitated choosing a platform for construction that was both widely available and easy to use with little formal instruction.

*Cost and Effectiveness:* Beyond initial purchase cost of hardware and software (as well as any required accessories), the longevity and durability of a chosen platform were identified as crucial factors in keeping the expenses associated with the guide as low as possible over its life cycle. Similarly, any platform chosen for the guide would need to be readily assessed for effectiveness in achieving the goals of increasing visitor engagement as laid out in the design concept. This assessment would preferably take the form of a component of the guide itself.

#### **Design Prototype**

The development of the museum guide prototype has been informed by design-based research (Anderson & Shattuck, 2012; Design-Based Research Collective, 2003; Reeves, Herrington, & Oliver, 2005; Reeves, 2006; van den Akker, 1999). Prior to developing a guide solution in the Palmer Museum of Art, the designers worked with the curator of education to deploy an assessment that would set a baseline for visitor engagement. This assessment took the form of a short survey delivered to visitors at the natural entry and exit points in the museum by way of iPads mounted in powered kiosks. The baseline data gathered in previous and future collection cycles will allow for direct comparison to visitor engagement reported through the devices and kiosks after the guide is available.



Figure 1: Illustration of a museum visitor using a kiosk to complete the visitor feedback survey.

In pursuit of the design concept and in recognition of the aforementioned design challenges, the designers constructed a prototype using the Apple iPad mini as a mechanism for delivering a preloaded, unpublished text created in Apple's iBooks Author software. The prototype guide walks visitors through an introduction to the Palmer Museum of Art and follows the flow of the museum layout, with context given for each gallery before a

presentation of its share of the works in the permanent collection. With each work, a recreation of the piece and its accompanying wall text is first displayed, with a linked audio recording detailing the work also available.



Figure 2: Illustration of basic steps that a museum visitor would follow to use the interactive guide.



Figure 3: Video explanation of the design prototype viewable at https://psu.box.com/palmermuseumguide

After initial information is presented, visitors are invited to answer a question about the artwork that can only be addressed by "touching" the work, using hotspots positioned on key areas of the work to reveal clues about it in the way a curator or docent might do so in person. Lastly, a short text about the work, its artist, and the historical/cultural context revealed through the preceding interaction, is presented as a summary to the visitor. Along with this summation, icons that allow for sharing feedback about the work via social media are presented, making conversation among visitors and the museum possible. This approach protects the copyright of the museum's content in that the guide itself is available to visitors on controlled devices exclusively - not being delivered by either third-party servers or downloaded directly.

The iPad mini is a very familiar device to a broad population and nearly all visitors to the Palmer Museum should have awareness of how to interact with a tablet of similar design. The iBooks Author application is both freely available and easy to use, with a drag and drop interface that makes it simple to integrate both existing images as well as recorded audio content and other supporting materials. iPad minis are both a manageable size for visitors of all ages as well as a reasonable cost per device (\$379 USD with Education discount). Fitted with a protective case to shield from drops and other damage, the mini is also rugged enough for the environment and will offer a life cycle of four or more years with limited upkeep expense. Finally, the iBooks Author platform allows for integrating web content directly into the guide itself, making it simple to include an assessment for either all or randomly selected visitors that can be completed at device return.

#### **Design Feedback**

Data were collected voluntarily from Palmer Museum visitors via kiosks at primary entry and exit points to the museum on the first and second floors. Data collection occurred during two consecutive spring semesters: Spring 2014 (February through June) and Spring 2015 (January through April). This collection cycle allowed for the comparison of data between similar year-over-year visitor cross sections.

Visitors were asked to self-identify based on possible affiliations with the University. For the purpose of this paper, the designers chose to divide respondents into three main categories: students (who represented 38% of visitors), faculty (who represented 9% of visitors), and "everyone else" (who represented 53% of visitors and identified as community members, parents or relatives of current or former students, visitors to campus, or graduates).



Figure 4: Illustration of Visitor Type data.

Visitors were also asked to define the purpose of their visit to the museum. This feedback was then divided into two main categories: Work and Leisure. The majority of respondents selected the more simply defined option, with 83% having made a leisurely visit to the museum. The remaining 17% of respondents visited the museum for work purposes, such as a "class assignment", "academic project" or "teaching or research".



Figure 5: Illustration of Visit Purpose data.

Another question, about interaction type, aimed to assess how visitors interacted with currently available means of learning about the permanent collection. The largest percentage of respondents (42%) stated that photographing works for later review was their primary way to follow-up on works of interest. Using the traditional wall texts that accompany works of art ranked second (28%) for method of engagement, with the remaining 30% split between "share via social media", "take tour with guide", "look up via mobile" and "download podcasts".

# Interaction Type (% of 354 respondents)



Figure 6: Illustration of Interaction Type data.

As well, feedback from visitors about their learning expectations revealed that 57% had their expectations exceeded by the museum. However, 20% of visitors expressed that the museum simply met their expectations, while 23% indicated that the museum did not meet their expectations. In light of this finding, further design of the guide will pay specific attention to improving the experiences of visitors whose learning expectations are not being exceeded by the museum. In this case, 43% of respondents.



Figure 7: Illustration of Learning Expectations data.

#### **Design Implications and Future Directions**

Owing to the prevalence of non-student/faculty visitors, the importance of reaching the self-motivated and leisure audience has been brought to the fore by the survey. As such, the role of the guide as a self-curated means of connecting with the permanent collection has been validated as highly important for the Palmer Museum. Subsequently, positive reception of the guide prototype on the part of Palmer Museum administration and staff has led to the museum adding specific language to its institutional strategic plan, including the guide as well as increased assessment of visitor engagement and purposeful inclusion of interactive technologies for both the permanent collection and special exhibitions.

As outlined in the design concept, the overarching goal of the guide project is to increase visitor engagement while in the museum space. A future engagement goal is to bring outside information into the Palmer Museum by connecting visitors with additional resources such as artist websites, the collections of other institutions, and art educational videos. Another goal is to foster ongoing visitor-to-visitor and visitor-to-museum dialogue centered on the experience of each work in the permanent collection. Immediate solutions to the above goals that have been deployed into the guide prototype include a "more info" puzzle piece button. This feature connects visitors to related works in the collection, provides additional information about artists of interest, and enables easy dialogue with the museum and other visitors through the use of the museum's social media channels.

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