Growing FLORES for the Museum

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Abstract

The Children's Museum of Indianapolis, founded in 1925, is one of few children's museums with a substantial collection. The changing needs of family audiences, and the museum's shift in direction toward a family learning mission, began to raise several questions for the collections and curatorial staff regarding the selection of objects that would hold the greatest potential for use with family audiences. The questions led to the development of the Family Learning Object Rating and Evaluation System (FLORES). This case study describes the development of the rating instrument and strategies the team took to fine-tune its use through input from curators and museum visitor preferences. By drawing on inherent object qualities as well as visitor preferences, museums can find ways to better understand the visitor-object relationship and in turn move toward more intentional selection and inclusion of objects in exhibition planning.

The Children's Museum of Indianapolis (TCMI), founded in 1925, is one of few children's museums with a substantial collection. Its current collection of approximately 120,000 objects grew over the years through community donations and intentional collecting practices. The collection has two major areas of emphasis: *Natural*, consisting of all naturally occurring specimens and *Cultural*, which includes all human made and used artifacts. The museum's primary focus has always been on using objects in exhibits and programs to support children's learning, and over the last fifteen years it has expanded that mission to include intergenerational family learning experiences.

The family learning mission at TCMI emphasizes intergenerational learning through active participation with exhibit components and programs, primarily through hands-on experiences and immersive environments. Family learning experiences include both adults and children in the learning experience and are intended to promote collaboration and problem-solving, increased communication between family members, inspiration to explore beyond the museum, and connections to personal memories and those in the larger social context (Dierking, Luke, Foat & Adelman, 2001; Wood & Wolf, 2008).

The Children's Museum Collection: From Cookie Jars to Fossils

Until recently, the curatorial activities and collections policies at TCMI followed a fairly traditional model of object-centered decision-making. Collection management and curatorial practices in the past not only focused on immediate exhibition needs, and preservation for the future, but also encompassed a level of connoisseurship including assessment of object rarity, artistic quality, scientific importance, and associative value. However, the changing needs of family audiences, and the museum's shift in direction toward the family learning mission, began to raise several questions for the collections and curatorial staff regarding the connoisseurship model. Among the key questions was the efficacy of the model in relation to the museum's audience: Do families and curators care about the same things when examining the objects on display? Is there a way to better predict what objects will hold the greatest potential for future use with family audiences? Are we collecting the right objects that support the museum's goals for experience development?

These guiding questions, in concert with the family learning mission, provided the opportunity for more explicit visitor studies research on the best strategies for selecting, displaying and interpreting the museum's collection for family audiences. The questions led to the development of the Family Learning Object Rating and Evaluation System ("FLORES"), which included a series of criteria designed to identify artifacts that best support the museum's family learning mission. This case study describes the development of the rating instrument and strategies the team took to fine-tune its use through input from curators and museum visitor preferences. As well, it provides insight into new approaches for using the museum's collection to support visitor experiences. The project as a whole demonstrates the importance of a museums objects and collections in contributing to visitor learning and engagement.

Demonstrating Value for Visitor Engagement with Collections

Determining the role of museum objects as part of on-going visitor engagement practices is important for creating a meaningful experience for family visitors and extending the role of the museum in families' lives. This includes a two-fold process of developing the collection and making curatorial choices about object selection that both reflect the exhibition goals and are informed by research. For a curator, making decisions about what does and does not appeal to families can be daunting; the goal for this project was to develop new strategies to achieve an intentional, data-driven selection and display of objects that would increase family interactions and extend their time spent in exhibitions. For the staff of TCMI it was important to better understand the role of the collection in support of a family learning experience. This approach required combining knowledge of object-based, curatorial research and practice with existing research on family learning and TCMI audiences.

The FLORES project began in 2013 by looking at the existing state of the TCMI collection with regard to the overarching family learning mission. It is not uncommon for museums to establish guidelines or systems for accepting objects into the collection, and TCMI had several iterations of checklists that evolved over time. (Its most recent iteration was established in the early 1990s.) The lists often included typical requirements for a potential object, such as its clear title and provenance, how it would appeal to children, and the extent to which it filled a gap in the collection. These early checklists

clearly focused on the connoisseurship model; reflecting a young museum's need to develop its collection, in the early years the curators were oftentimes fairly generous in what might qualify as worthy of acquisition. As a result, the museum's current collection reflects a very eclectic range of materials that range from type specimens to relatively common, everyday ephemera. While the criteria do offer the museum a significant range of options, its realistic use of some objects is often harder to realize.

In order to develop a rating system that reflected the museum's family learning mission as well as the existing collections materials, TCMI's research team began an iterative process that incorporated existing curatorial practices of its staff along with an extensive literature review on the role of objects in exhibitions. This was paired with a three-phase prototyping process with both staff and museum audiences that took place from the fall of 2013 through summer 2015. The goal was to produce an easy-to-use predictive tool that curatorial staff could use to identify and select objects most appropriate for inclusion in exhibitions and programs. The tool would help identify which objects were more likely to elicit key family learning behaviors such as reflecting on or making connections to a prior family experience, or discussing features of the object or its use and purpose. Additionally, the tool might be of some use in making decisions around acquiring and deaccessioning objects from the collection.

Establishing Criteria for Rating Objects

Developing an appropriate structure for the rating system meant incorporating a visitor's experience with the object and the inherent qualities and stories that come with objects on display. Wood & Latham's Object Knowledge Framework (2013), which describes the transaction that happens between visitor and object, provided direction for the overarching goals for this project. The rating tool would draw on both inherent object qualities such as story and aesthetic qualities (the "object world"), but would also incorporate the experiences of families in terms of their prior knowledge and interest, as well as overall connection to their own lives (the "visitor lifeworld"). Two strands of literature helped to inform the final rating system: exhibition design and overall collections management.

Little research in the field of exhibition design examines the inherent properties of the objects themselves and how curatorial staff might consider the likelihood of an object's successful attracting

power in an exhibition. Past visitor studies research on exhibitions has clarified how visitors, objects, and environment interact within an exhibit space by examining the characteristics of exhibition design and how visitor behavior is affected by various features such as labels and layout (Bitgood, 2010; Bitgood & Patterson, 1993; Bitgood, Patterson, & Benefield, 1988; Johnston, 1998). For instance, Bitgood and Patterson (1993) released a study which concluded that the power of objects to attract visitors remained consistent regardless of changes in labeling. Other scholars have considered how visitor interaction with objects and hands-on experiences influence visitor behavior (Koran, Morrison & Lehman, 1984). More recent studies have also looked at how the attention of visitors is elicited and the multiple characteristics of exhibitions which, taken together, combine to attract or repel visitors (Bitgood, 2010). Bitgood's writing touches briefly upon the importance of factors such as object size, multi-sensory features, and locational relationships between objects, in visitor decision-making about object viewing. Yet this discussion emerges from the lens of design, rather than a collections standpoint. Leinhardt and Crowley (2002) discuss four features (resolution and density of information; scale; authenticity; and value) that make objects facilitators of learning, especially for family conversations. These features highlight the intersection of inherent physical properties and contrived cultural characteristics of an object that compel visitors to either take notice of it or continue walking. More recently, Froggett & Trustram (2014) have used a psychosocial perspective to evaluate how visitors establish a relationship or personal connections with museum objects, focusing on the experiences and background of the individual rather than any inherent characteristics of objects.

Several recent projects in collections management research have focused on selection factors for objects that will elicit visitor attention to or connection. For example, the University College London *Collections Review Toolkit* (Dunn & Das, 2009) includes two rubrics, one focused on collections care and the other on collections use and significance. The care rubric discusses practical physical assessments such as the condition of the objects and the requirements for their maintenance. The collections use and significance rubric evaluates characteristics mentioned above such as uniqueness or value, but also touches upon an object's relative merit for purposes of teaching, research, or public engagement. Clearly,

integrating components of an object's care as well as its use would be important in the defining criteria for use in exhibitions.

In general, research in this area has demonstrated that the environmental and intellectual context of an exhibit space shapes visitor behavior and learning, and museum professionals can manipulate this context through their use of design principles and interpretive materials. Given this, it is reasonable to suggest that museums can also manipulate visitor attentiveness through the choices of items from a collection, as these items have been shown to possess certain physical and cultural properties that influence visitor decision-making about objects.

Implementing FLORES

Drawing on a wide range of literature, including information on exhibition design, features of objects, attracting power, and psychosocial perspectives, the Family Learning Object Rating and Evaluation System (FLORES) includes six measures on a seven-point scale. It rates inherent object qualities like aesthetics, condition, provenance, and ease of identification, as well as a series of transactive qualities such as potential for generating discussion, personal interest, and generational appeal. Through prototyping and pilot testing, the research team refined the six measures that weigh both object qualities and visitor behaviors to create a score that can determine the extent to which visitors might be attracted to an object. To use the tool, a reviewer scores the object according to each of the six criteria to arrive at a final score out of 100 (Table 1). Following the testing phase the research team set an initial "cut score" at 72, determined by reviewing ratings of multiple objects known to have strong visitor preferences. Objects above this score have the highest potential for family learning. Objects with FLORES scores below 72 were less likely to support family learning and were thus strong candidates for deaccessioning.[1]

Briefly, the six measures of FLORES are defined as follows:

1. *Recognizable by a family audience.* A family audience has some level of familiarity with what the object actually is, or audiences are readily able to make sense of it (Norman, 1988). A highly rated object would be easily identifiable by a family member, not requiring a significant level of knowledge or expertise.

2. *Has a compelling story.* The object's origin or prior use can be explained through a personal connection or ownership (Dunn & Das, 2009), or has historical or cultural significance that lends both a sense of credibility and authenticity of the object (Leinhardt & Crowley, 2002).

3. *Promotes discussion or family interaction.* Visitors are able to make meaning from personal connections or the object's cultural or social significance (Froggett & Trustram, 2014; Turkle, 2007; Wood & Latham, 2013). The object connects to some aspect of the visitor's life experiences and the interpretation of the object can extend or expand on this experience.

4. *Can be used in an exhibition on display.* The object is of stable material and in good condition; its physical condition is such that it can be used regularly in exhibits, programs, or other displays. Long-term display in exhibits is acceptable and/or it could be used, programmatically (Dunn & Das), potentially with interactive and hands-on components (Koran, et. al., 1984).

5. *Is unique, special, or rare: "it belongs in a museum."* There is a perceived value that is worth looking at (Bitgood, 2010) or has some level of uniqueness separate from the object's authenticity (Leinhardt & Crowley). The object is important, iconic, and relevant to the overall message or themes of an exhibition (Francis, Slack & Edwards, 2011).

6. *Is aesthetically pleasing or inviting.* The object has some level of detail that appeals to the senses, such as its color, texture, or smell (Leinhardt & Crowley); it has a perceptive value without reference to another object (Diamond & Diamond, 2004, Leinhardt & Crowley) or an, inherent degree of attractiveness (Francis, Slack & Edwards).

[Insert table 1 about here]

Testing and Refining the Tool

Testing and refining the FLORES system is ongoing and beginning to show promising results for predicting the family learning potential and overall visitor interest of an object. To date, three phases of testing have been completed. In Phase 1, conducted in the fall of 2013, the research team tested 100 objects from the museum's collection; roughly 60 were selected at random from its collection database and the rest were chosen on recommendation from curatorial staff. This phase of testing included two

components: testing the criteria and usability of the FLORES rating tool, and collecting audience feedback on objects. In order to test the criteria, 35 Museum Studies graduate students from IUPUI enrolled in two classes (Collections Care and Management, taught by Holly Cusack-McVeigh and Object-Based Learning, taught by Elee Wood) worked in teams to assess a set of objects. Each team was assigned a set of five objects; students were given access to all of the museum's collections records on these objects and spent two hours researching and recording data on their condition in the museum's collection department (Figure 1). From these research sessions each student completed a FLORES score for each object and made a recommendation on whether it should be maintained in the collection or was a candidate for deaccessioning.

[insert Figure 1 about here]

Students then selected objects to test with museum audiences. Family groups were asked to review a set of photographs of eight different objects along with a simple identification label with the name of the object, its place of origin, and its date of origin. Visitors divided the object photographs twice: first, they sorted memorable objects from those which were forgettable, then the familiar from the unfamiliar. Finally, the visitors ranked the set of objects in order from most important to least important according to their own perceptions, and then were asked to explain their answers. Using the audience feedback, the research team then compared the audience preferences to the overall object score. Key findings from this phase of study indicated that if visitors categorized an object as more memorable, they also ranked it as more important. For visitors, familiarity of the object was not a factor in ranking the object as important. For example, 88% of the visitors labeled a Conestoga wagon as "memorable" and 83% as "familiar." They ranked the wagon as most important 50% of the time, and overall 74% of visitors put it in the top four items of the set. Conversely, of the visitors who looked at the 1927 Japanese friendship doll, "Miss Shimane," 50% labeled it as "memorable" and 42% as "familiar." Sixty-seven percent of the time visitors ranked the doll in the bottom in terms of importance.

Using the visitor data alongside the object's FLORES score provided greater insight into refining the tool and its potential. In the first iteration of the tool, the scores reflected visitor preferences

approximately half of the time. For example, the Conestoga wagon had a score of 70.3, just below the cut score, and was ranked third overall in importance by the audience. The friendship doll had a very high score of 89.3, but an overall audience rank of 23rd of 40 in order of importance. In order to better understand the discrepancies between the score and the audience preferences, the research team drew on the observational data and visitor description of their interests. Overall, the family *discussions* about objects centered around three main areas: 1) the sensory elements of the object (texture, color, shape, size); 2) defining, explaining or questioning the background information on the object's function or use; and 3) creating or situating the object within a narrative or story. When asked what more they wanted to know about the object, almost all visitors discussed or asked questions related to the object's function, purpose, background or use. Knowledge and function questions about the object were more prominent with objects that were unfamiliar to the visitor. Conversely, the kind of meaning making that visitors experienced with or around the objects, based on the content of their conversations, was rarely related to the function, use, or content background of the object. Instead, these were focused on personal connections or relating the object to something they had seen elsewhere. For example, a child's christening gown most often generated responses related to family experiences with baptisms, making a gown for a child, or a memory of one's own gown.

During the summer of 2014 the researchers undertook another phase of testing with museum audiences. During Phase 2 visitors were asked to look at the same set of objects, but this time the physical object, rather than a photograph, was on display and tested with two different types of labels. Visitors were first shown simple labels that included object name, place of origin and date of origin and asked to rank the objects in order of importance. Then, the observer flipped the labels and had visitors rank the objects again; this second set of labels were more story-based, often playful in tone, and ranged from informative to narrative descriptions of key features or aspects of an object that might help visitors understand its role, purpose or function. This iteration of testing qualitative analysis revealed that visitors preferred objects that were unique or rare, highly colorful, perceived to be "old," and related to family memories or stories. Visitors preferred an object less if they had "seen too many before" or had difficulty

determining the object's purpose, even with a basic identification label. Overall the in-person ratings were one-point higher on average, and the objects that were either very large or very small increased in ratings by more than one point. As has been found in other research on object-label testing (Francis, Slack, & Edwards, 2011), the interpretive labels did not generally change a visitor's perception of the importance of the object.

Data analysis during Phases 1 and 2 included comparison of rankings; content analysis of the observation and interview data; and comparison of visitor preferences with the rating system results. In all, 156 different family groups (256 adults, 287 children) participated across the first two testing sessions. Based on testing, the first iteration of the FLORES rating system accurately predicted whether visitors were interested or not interested in the object at least half the time, but 25% of the time an object's rating was higher than visitor preferences, i.e. the object score suggested that visitors would be more interested in the object than they actually were. Given these responses, in reviewing the relationship between visitor categorization and ranking, the researchers determined that more work was needed to refine the criteria of the rating system to achieve better consistency. This meant trying to understand the discrepancies between the object rating and the visitor responses. For example, the object's aesthetic qualities were an essential feature of conversation and preference, but were not separated out in the initial scoring system. Similarly, the initial criteria lumped personal connection and intergenerational appeal together, yet visitor responses indicated these were clearly two different ways of thinking and talking about the objects. By carefully reviewing these discrepancies and the existing research, the researchers were able to create a more refined series of measures.

During Phase 3 the research team used the revised FLORES tool to rate a series of objects already on display in the museum and compared the ratings with existing timing and tracking data. These data provided the team with a first-hand account of the relationship between the object score and amount of time spent by visitors at the object. Using 146 objects for comparison, the average time spent by visitors at each object or case of objects was 39.63 seconds (n=1,308 object views). The rating system proved to be a useful guide in demonstrating which objects were more and less likely to be observed by visitors.

Unfortunately, when multiple objects comprise a case display, determining which object the visitor is looking at is very difficult. Similarly, a number of design factors that come into play must be considered. The research team is now working to develop a system to more closely track visitor attention to objects within cases. Given the complexity of this situation, the team opted to review the single object cases and their related FLORES score along with the visitor stay time at those cases. Using a statistical measure of prediction, the initial findings demonstrate a weak potential relationship between the object's score and the amount of time a visitor spends at the case. In other words, the score does have some predictive value, but it is yet imprecise. Initial results suggest that objects above the cut score of 72 are more likely to have higher stay times than objects below the cut score. There is less indication at this point that higher scoring objects result in longer stay times overall. This is in part due to the very small number of instances of single case objects (n= 13) and overall visitor observations at TCMI.

Lessons Learned

The development of the FLORES tool reveals a fascinating interplay between visitor knowledge and object displays. In particular, the audience research and object rating system helps to distinguish key object features that best connect to the visitor's prior knowledge and personal experiences with those elements of the object that are more likely to connect with the visitor. For example, audiences indicated both a cowboy pig cookie jar (Figure 2) and the 1949 Crosley console television set (Figure 3) were familiar objects, but rated the TV as more memorable than the cookie jar. On the FLORES scoring, the TV rated at 84.96 and the Cookie Jar at 48.9, demonstrating the importance of looking beyond simple measures of familiarity or memorability.

[Insert Figure 2 and 3 here]

Similarly, the team considered objects that with a compelling story or provenance alongside dimensions of aesthetics and family discussion. Here the primary example is the difference between a 1951 Black Phantom Schwinn bicycle, and the 1927 Miss Shimane Japanese friendship doll (Figure 4). Both objects provide intriguing back-stories that might appeal to a family audience: the Schwinn was a Christmas present and Miss Shimane part of a goodwill exchange of dolls between the US and Japan in

the 1920s. While these backstories make for fantastic collections research, the compelling factors for museum visitors were different. Visitors had a far more difficult time making connections to the doll or finding something to talk about it, even despite efforts in Phase 2 to provide more descriptive interpretive labels making contemporary connections to things like the American Girl Dolls. Here too, the FLORES score reveals potential for differentiating the objects: the bicycle scored 83.18 and the doll 78.54, but with both objects landing above the cut score, making a decision on the use of either object would require clear interpretive messaging and intentional strategies to attract family audiences. A final noticeable difference in the use of the FLORES tool for overall object selection came from the inclusion of aesthetics as a factor of interest. Here again, although visual appeal certainly contributes to a family's reaction, the object's aesthetics cannot be used alone for decision-making. A fine example of this comes from the comparison of two vibrantly colored objects: a 3' tall "self-portrait" sculpture, and a small, bright red, enameled turtle toy. The colorfulness of each object drew families' attention, but they quickly lost interest in the turtle because they could not imagine how it was used, what its purpose was, or how it could be of interest. The self-portrait has many more components that help family members make sense of the object. Created in the style of a Southwestern storytelling doll, it features a variety of smaller dolls of family members engaged in different activities--cooking, dancing, working on a computer--scattered throughout the skirt of the main figure. The images of different, contemporary activities depicted in the sculpture provided high levels of conversation and connection for family audiences.

[Insert Figure 4 here]

This study provides insight on visitor responses to objects in a museum setting and the different perspectives have on those objects. By drawing on inherent object qualities as well as visitor preferences, museums can find ways to better understand the visitor-object relationship and in turn move toward more intentional selection and inclusion of objects in exhibition planning. The development of this object-rating system contributes to a broader view of the complexities of visitor-object relationships. It draws on current research that centers on the personal and psychosocial connection to objects and builds on past knowledge of the environmental and intellectual influences on visitor behavior and learning. This new

strategy allowed a more intentional selection of objects by curators and exhibit developers by identifying the object-based features or characteristics that best support dialogue and interaction of visitors. With these objects there is greater potential to increase the time spent with the objects, which enhances the overall learning value and meaning of the museum visit.

The FLORES tool is not without some flaws however. Through the Phase 3 testing it became clear that the predictive value of an object is more complicated when it appears in a case alongside one or more objects. As such it is nearly impossible to confirm the individual level an object effects on audience members. As well, the design and lighting of the case, and related interactive experiences that are adjacent to the object undoubtedly have an effect on the visitor attention and stay time at any particular object or object case. Two key examples illustrate this point nicely. First, the team found that for "stand alone" cases with a single object on display, the average visitor stay time at an object was 38.2 seconds. The stay time at cases with multiple objects averaged 40.9 seconds, and those objects with interactive components as part of the object case averaged a stay time of 46.3 seconds. Clearly the interactive components increased stay time, but the small difference between single objects and multiple objects in a case could be related to some additional elements of design. Second, in addition to the potential influences that multiple objects and interactive experiences have on the visitor stay time with objects, design elements such as the location of the object cases within an exhibition space, color choices, layout and lighting can also play an important role in visitor attention and attraction. For example, timing studies in TCMI's *Take Me There: China* exhibit found that at a multiple-object case of religious artifacts, adult visitors were more likely to stop and look at the case when they saw it in front of them than if they approached from either side. Timing and tracking of family groups indicated that very few children were attracted to the case overall regardless of how they approached it. Museum staff will use this information to study visitor behavior in greater detail and plan revisions to case layout and design where possible, and to inform future decisions on object use and selection.

 Up Next: Intentional Selection of Objects

Up to this point the FLORES tool has been used in prototyping and post-hoc analysis of visitor attraction and interest. Moving forward, TCMI's collections and exhibit development teams will begin to experiment with using the tool as part of the object selection and identification process when planning exhibitions. Teams will rate the objects using the FLORES tool in advance of the exhibit opening and use the tool as strategy for selecting the best objects for inclusion in the exhibit.

As the exhibit planning teams develop their main messages and goals for each exhibit, they will also review the museum's collection and potential loans for objects that best fit the exhibit's goals and messages. By working across the categories of the FLORES tool, both exhibit developers and curators can discuss the interpretive needs of the exhibition, the role that objects will play in that interpretation, and the potential that collections objects have to advance an exhibit's overall storyline. In very initial tests to date, use of the rating system prompted more discussion between designers and curators around how best to display objects that had lower ratings, and stimulated greater discussion among exhibit planning teams on whether an object was a strong choice overall given the potential limitations of audience interest (Serrell, 1998). For example, in an upcoming exhibition on fairy tales, the curator and exhibit developer used the FLORES tool to determine which objects would need stronger interpretation and those that were better used as background material rather than as focal objects in the exhibit.

The goal of a museum exhibit planning team is to increase the overall time that family audiences spend with objects and to increase the number of visitors overall who view objects in museum exhibitions. By focusing on the interconnected nature of object qualities along with existing knowledge of visitor preferences, museum exhibitions and displays can connect with visitors more effectively and ultimately create more relevant museum experiences. As the unique feature of museums is in making connections between visitors and objects of human experience, harnessing the power of visitor studies research to support that goal seems ever more prudent. Similarly, several of the collections staff have indicated an interest to use FLORES to support (and justify) decision-making for acquiring new material and in deaccessioning materials that are no longer relevant to a museum's mission. Use of the FLORES tool in a pre-acquisition situation will provide curators with a broader perspective on the aspects of

potential objects and where they may or may not have the best impact for family audiences. FLORES helps staff determine the role of the object in relation to the audience experience further demonstrates the importance of collections in shaping the overall visitor experience.

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