

**Hands-on, Mindful, and Heartfelt  
Learning**

**A Model for the Art Museum**

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## Introduction

The above *Baby Blues* comic strip from 2005 is a poignant reminder to museum educators that we have a mountain of perceptions (and misperceptions) to overcome if we are to succeed in our work. Through innovative educational programming, art museums are striving to increase their audiences and enhance their status as viable places of learning in the community. At the same time, families and schools are also seeking quality experiences that are both educational and entertaining. The art museum tradition of passive learning (e.g. text-heavy and/or lecture format interpretation) does not inspire and engage all learners and, as in the case above, these approaches often alienate would-be visitors. Therefore, to be a relevant resource for learning and a vital presence in the community, art museums must provide learning experiences that are approachable, accessible, and engaging to a diverse audience.

The intent of this paper is to examine various theories of education and research about museum visitors to determine definitions of effective learning and practical applications. To this end, I have explored and identified the educational philosophy,

learning model, and environment and program design that are most appropriate for the art museum setting. I have also outlined planning strategies for the implementation of a multi-generational learning space, addressed the unique benefits of such a model when situated in the art museum environment, and included a case study of my experience as facilitator of the FingerPrints Interactive Gallery planning process for a learning environment that will be implemented at the Plains Art Museum in Fargo, North Dakota.

## Defining and Adopting an Educational Philosophy

*“Education is not filling a bucket but lighting a fire.”  
- William B. Yeats*

Art museums have a responsibility to their communities (and themselves) to make clear their educational missions and values. To do this, the museum must wholeheartedly embrace an educational philosophy that informs all its endeavors. George E. Hein, in his book, *Learning in the Museum*, describes educational philosophy as a complex concept that consists of theoretical assumptions about the nature of knowledge (epistemology) and scientific assumptions about human nature and learning. Once established, a museum’s epistemology and theory of learning should combine to form the basis for pedagogical practice. In order to define a clear educational philosophy, it should be based on sound theory, understood and accepted throughout the museum, and linked to practice. It should also include a policy: who will be educated and why (3-14). Unfortunately, museum practitioners are often so busy with day-to-day multi-tasking, there is little time left for philosophical considerations.

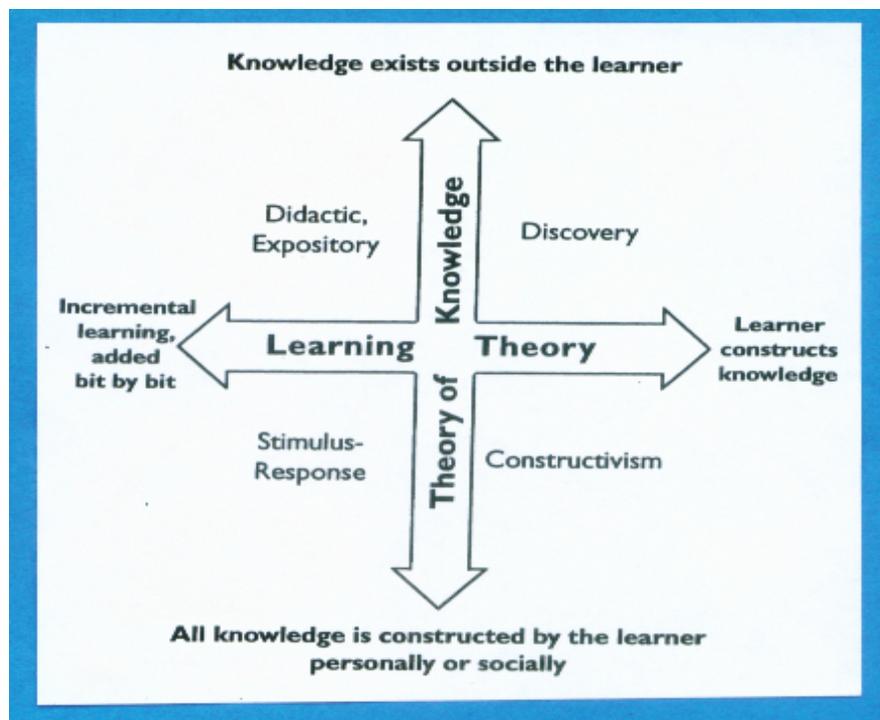
Hein has provided a useful model that can simplify the process of choosing an educational philosophy. This model illustrates the ideas of John Dewey, who stated in *Experience and Education*, “The history of educational theory is marked by opposition between the idea that education is development from within [what Hein calls an “idealist” philosophy], and that it is formation from without [“realist” philosophy]; that it is based upon natural endowments, and that education is a process of overcoming

natural inclination and substituting in its place habits acquired under external pressure [...]” (Dewey 1).

Both the idealist and realist epistemologies and learning theories are accommodated in Hein’s model, and he relates each combination of the various approaches to pedagogy. The model enables the museum practitioner to review a number of theories to choose what Dewey referred to as a “well thought-out philosophy” of education (Dewey 9).

### Hein’s Education Theories Model

#### Realist Philosophy



#### Idealist Philosophy

Fig. 1. George W. Hein’s Model, *Learning in the Museum*. (London: Taylor & Francis-Routledge, 1998) (25)

The educational position a museum chooses to take, whether realist or idealist, should determine the nature of its educational programming and exhibition design. Hein notes if the museum's mission is to impart its voice of authority regarding its collections and exhibitions, then its philosophy of choice would be at the top and left of the quadrant, assuming that knowledge exists outside the learner, who acquires this knowledge incrementally through expository means. If, however, the museum takes the position that knowledge is relative to the personal and social attributes of the learner, then the museum will take the idealist position, designing its exhibitions and programming to show multiple perspectives and allowing visitors the freedom to create personal meaning from their experiences (19, 21).

Awareness of this multiplicity of philosophical considerations is necessary for beginning a museum-wide dialogue. When the educational philosophy of a museum is not discussed or defined, then a clear consensus of strategy will not unite the curatorial, education, fundraising, and marketing endeavors. Once the possibilities are studied, however, all departments in the museum can proceed collaboratively to adopt a philosophy that is informed by sound research and that reflects the mission and vision of the museum as a whole.

George E. Hein and Mary Alexander state in *Museums: Places of Learning*, that in choosing or developing an educational philosophy, museum professionals must consider these questions: What is knowledge, and is it found in the physical world or in the individual mind? How do people learn, and what is the role of activity in the process? What pedagogy is most appropriate for putting the chosen theories into

practice? (30) A review of research on museum-based learning will help formulate answers.

In their book, *Learning from Museums: Visitor Experiences and the Making of Meaning*, John H. Falk and Lynn D. Dierking state that providing compelling evidence for learning is a particular challenge for museums, not because the evidence doesn't exist, rather the term "learning" in the museum context is a misunderstood concept (9). Hein and Alexander concur, stating that when learning was defined according to realist thought, researchers concluded classroom activities were more successful in meeting learning objectives than the less-structured museum visits. Hein and Alexander feel the realist approach is not a good fit for museums because it doesn't accommodate the rich experiences that emerge from the informal, free-choice learning that is inherent in the museum setting (35). When researchers began to measure learning in terms of the meaning visitors make of exhibitions rather than the degree to which visitors understand the museum's messages, the models developed to describe learning changed (Hein 151).

Hein and Alexander suggest the idealist epistemology and constructivist definition of learning are especially appropriate for the museum free-choice setting (42). It is this constructive quality of learning which enables humans to invent, theorize, and reach conclusions that are validated by an internal standard of truth (36-37; Falk and Dierking 28). According to researchers Marianna Adams and Theano Moussouri, in the free-choice museum setting visitors will construct their own meaning regardless of what museums hope visitors will do or learn. Therefore, an effective learning environment

will not only permit, but actively encourage open-ended exploration of objects and ideas (16).

## Developing a Model

*“Much learning does not teach understanding.”  
- Heraclitus*

Providing opportunities for choice and control are necessary components of the constructivist learning environment. According to Falk and Dierking, free-choice learning in the museum is affected by multiple factors: Why visitors come, with whom they visit and for what reasons, what they already know and believe, what their skills and interests are, their prior museum experiences, and subsequent reinforcing events that occur in their lives. These factors influence what people focus on and, therefore, what they learn comes out of their perceptions of what is personally relevant and meaningful (8, 84).

In order to design a successful constructivist free-choice environment, a holistic approach to learning must be considered. John Dewey’s theory emphasizes the experiential aspects of learning, where “hands-on” exploration must be matched with “minds-on” problem solving for learning to take place (cited in Hein 2). Falk and Dierking’s research has shown that emotion also plays a significant, if not essential role in learning (16-21). Therefore, the ideal learning model for the art museum should provide opportunities for hands-on, mindful, and heartfelt learning.

### **I. Hands-on Learning**

Confucius once said, “I see and I forget. I hear and I remember. I do and I understand.” This quote illustrates the importance of “doing” in learning. Since the

traditional mission of art museums is to preserve and protect works of art, learning opportunities are usually confined to looking at, or reading and listening about, the objects rather than interacting with them. Recent studies, however, have found that exploring objects through touch increases visitor dwell-time and attention to learning, so the chances of internalizing the concepts represented by the object are increased (Alvarez 1; Sternberg 163). Hein and Alexander note the value of tactile exploration in museums was first documented by Melton. His research demonstrated that when given the option to manipulate components, the average time visitors spent at an electricity exhibition increased from 13.8 to 23.8 seconds. Melton's findings have since been demonstrated in several investigations, which emphasize the importance of interaction in learning (16).

The visitor's experience of touching objects is enhanced when all the senses are employed. Surrounding the visitor with sights, sounds, and textures is a powerful learning tool, which will pique their curiosity and encourage exploration (Adams and Luke 7; Falk and Dierking 195-96). Immersing visitors in a sensory experience allows abstract experiences to connect with concrete ones, and helps learners comprehend, and sometimes challenge, the visual and verbal information usually presented in the art museum (Alvarez 1; Sternberg 163).

The human senses of touch, taste, and smell are strongest at birth. It is not until later that the infant "advances" to using sight and sound to investigate and learn. Some people, most notably those with visual impairments, continue to rely on the alternative senses to learn. Unfortunately, this kind of learning is not embraced by most schools,

and statistics show these alternative learners represent a large percentage of students who fail or drop out. For both children and adults, allowing multi-sensory exploration of objects re-awakens the basic human urge that drives infants to reach out and touch, taste, and smell the objects in their world (Alvarez 1).

Often, the word “interactive” is used to describe multi-sensory learning experiences. Most interactive learning environments are created on the premise that active learning is preferable to, and more meaningful than, passive learning, and that their presence can transform a static museum into a dynamic learning experience (Hein and Alexander 16; Witcomb 129). Research indicates that allowing sensory interaction with objects not only increases the learner’s understanding of concepts, but also fosters personal connections to art (Alvarez 3).

## **II. Mindful Learning**

A rich, meaningful experience requires more than sensory investigation. According to Bradburne, the word “interaction” is used to describe a plethora of activities that range from trite to inspired (2). Intrinsic to the interactive model should be the open-ended investigation of objects and concepts and the opportunity for personal meaning-making (Witcomb 133). Psychologist Mihalyi Csikszentmihalyi and others have observed that people who enjoy challenging, free-choice activities state that what keeps them involved is the inherent quality of the experience. Csikszentmihalyi calls this quality the flow experience, generally described as a spontaneous, almost automatic state where all of one’s mind and body become completely involved, as if in

the “flow” of a strong current (cited in Falk and Dierking 24-25). A challenging task, where the learner feels competent and in control, marks the essential quality of a mindful flow experience.

Bradburne refers to Richard Gregory, founder of the Bristol Exploratory, Britain’s first interactive science center, as using the word “minds-on” to describe learning and engagement at many levels. Bradburne goes on to state a self-sustaining experience must increase in complexity so the learner is challenged to continuously improve his or her level of knowledge and skill. As a result, the visitor will be motivated to return to the exhibit again and again to repeat the provocative experience (1, 3-4). A mindful experience, therefore, will not only be challenging and thought-provoking, it will also encourage visitors to enjoy learning for its own sake.

### **III. Heartfelt Learning**

The director of the Museu de la Ciencia in Barcelona, Jorge Wagensberg, speaks of “hearts-on” exhibits when discussing their emotional quality (quoted in Bradburne 1). Research by Rose, Sylwester, and Hilts demonstrates that emotion is an important aspect of learning. Fundamental to this process is human biology. Since humans are constantly bombarded by more sensations than could ever be processed or remembered, all incoming sensory information is screened for meaningfulness and personal relevance by the brain’s limbic system. It is thought the limbic system first evolved among reptiles. Located in the middle of the brain, the limbic system is well developed in all mammals and helps regulate emotions and memory (cited in Falk and Dierking 17).

Damasio and Piaget have noted that just as all learning involves emotion, emotions virtually always involve cognition (cited in Falk and Dierking 18). Sylwester and Damasio have further established that the stronger the emotional value, the more likely sensory information will be allowed through the limbic filter and admitted into memory. The limbic system also favors pleasant experiences over unpleasant ones (cited in Falk and Dierking 18). Thus, education and entertainment are a necessary and complementary combination, which forms the essence of the museum free-choice learning experience. As such, the learning experience should be fun, relevant, and challenging so that the learner engages willingly and enthusiastically in the learning process.

According to recent studies, children best remember and learn through kinesthetic experiences and play (Adams and Moussouri 11; Hoppenfeld 2). Hoppenfeld states that children learn with their senses, their heads, and their hearts through play, which is intrinsically motivated, emotionally satisfying, and personally rewarding. While at play, children can freely and safely express ideas, indulge their imaginations, experiment, and problem-solve (2). Following the ideas of Vygotsky, Nicolopoulou has argued that play contributes to and reflects a child's intellectual, emotional, and social life (cited in Hein and Alexander 19). According to Csikszentimihalyi and Hermanson, only when society reprograms learning into externally imposed, subject-focused tasks does "learning," for many, become tedious and difficult (cited in Falk and Dierking 18). For these reasons, play is an especially appropriate model for free-choice learning in museums.

Play need not be restricted to children. Kay Redfield Jamison writes in *Exuberance: The Passion for Life* that artists are adults who still remember how to play, using processes and ideas to create forms and images that engage the body, mind, and heart (cited in Forbes, Hill, and Adams 2-3). In his book, *The Arts and Creation of Mind*, Elliot Eisner states the artist at work and children at play are in a creative and receptive state of mind (qtd. in Moreno and Dywan 2). An interactive learning environment can and should be designed to encourage both children and adults to use play to explore art and ideas.

#### **IV. The Learners**

In order to create an effective learning environment in the art museum, the complex ways multi-aged visitors learn in free-choice environments, as well as their fundamental needs, must be considered and addressed. Falk and Dierking propose that by using their multi-dimensional Contextual Model of Learning, museums can create better learning environments and experiences for visitors. The Contextual Model of Learning is a systematic approach to museum learning that involves the interactions between three overlapping contexts: the *personal*, the *sociocultural*, and the *physical*. These contexts embody the following eight key factors that influence learning in museums:

##### Personal Context

1. Motivation and expectations
2. Prior knowledge, interest, and beliefs
3. Choice and control

##### Sociocultural Context

4. Within-group sociocultural mediation
5. Facilitated mediation by others

### Physical Context

6. Advance organizers and orientation
  7. Design
  8. Reinforcing events and experiences outside the museum.
- (qtd. in Falk and Dierking 178)

### **Personal Context**

Falk and Dirking state the three personal factors—motivation and expectations; prior knowledge, interest, and beliefs; and choice and control—will determine, not only what the visitor attends to, but also how learning happens. In other words, visitors must connect what they see, do, and feel with what they already know, understand, and acknowledge, within an environment where they are free to explore on their own terms. This results in the wide range of individual experiences visitors have in museums (cited in Hein 151).

Our present interest in how diverse populations learn began almost two hundred years ago from scientific studies of individuals with disabilities. Howard Gardner has continued this investigation, and his theory of multiple intelligences suggests that humans possess a range of unique cognitive modes that should all be valued (Hein 165-66). Gardner adapted this theory to the museum experience by developing the MUSE (Museums Uniting with Schools in Education) Entry Points, via Project Zero at the Harvard Graduate School of Education. The Entry Points describe five different ways to approach a work of art: Logical, Aesthetic, Narrative, Foundational, and Experiential (cited in Hoppenfeld 3). Using these entry points as a basis for activity design will help create experiences that appeal to multiple learners.

## **Social Context**

According to Falk and Dierking, humans are social animals who learn through social interaction, either through within-group sociocultural mediation or facilitated mediation by others (38, 178). Their research has found that socially facilitated learning is often a component of free-choice learning, particularly in the museum setting where most multi-age visitor groups consist of families or school groups (46, 110). Also, they cite Lev Vygotsky's social development theory of learning, which he called "scaffolding," that stresses the important role of adult guidance and peer collaboration in the development of children's thinking (qtd. in Falk and Dierking 44). To be successful, museums should take this research into consideration and design learning environments that embrace and facilitate the physical and intellectual process of social learning (Adams and Moussouri 16).

Families, defined as any small multigenerational group, visit museums to learn, be entertained, and socialize (Hein and Alexander 22). According to Ash, museums provide unique environments that facilitate collaborative learning, where family members share and consolidate their individual experiences. In the museum setting, adults and children help one another understand the exhibitions from their multiple perspectives, while peers share experiences and bond socially (cited in Falk and Dierking 95, 138).

Although very little research has focused on the sociocultural context of school field trips and the role they play in children's learning, some studies do suggest that the social interactions of school children are important and, if accommodated, can result in significant learning (Balling et al cited in Falk and Dierking 102). These findings are

consistent with Azmitia's research showing students better remembered and articulated ideas about exhibits they explored actively and in collaboration with their peers than when thinking and learning alone (cited in Falk and Dierking 103).

According to Salmi and others, if given a choice, children prefer going to museums with their family over school field trips. School visits to museums tend to be more structured, and children value the relative independence they have as part of a smaller group, where they can choose what to do and set their own pace. Students also indicated they perceived empowered learning as enjoyable and teacher worksheets an imposition (cited in Falk and Dierking 86). In a dissertation study, Griffin and Symington created school visit experiences that presented students with more choice and social interaction. These unstructured experiences were not only preferred by the students, they also learned much more than a matched group of students in a structured school visit (cited in Falk and Dierking 104). These findings should inform how museums design their interactive learning spaces as well as their programming. By offering self-guided learning games and/or challenges, museums will encourage group interaction and open-ended exploration of ideas and objects.

### **Physical Context**

The physical context of a learning environment will affect the quality of learning and meaning-making that takes place in the space. This context consists of advance organizers, design elements, and reinforcing events outside the museum. According to Falk and Dierking, research suggests since human survival depends upon knowing where one is in space and time, being lost or disoriented is very threatening. This evolutionary phenomenon exists to help humans negotiate their environment. With this

research in mind, Falk and Dierking recommend designing the learning space, not only for aesthetic appeal, but also for physical and emotional comfort (113-14, 133). An effective design will ensure the comfort of visitors by providing orientation to the space, ample amenities, a clear message defining purpose and function of the space, and everything needed for a positive interactive experience (Hein 152). Subsequent events that reinforce the museum experience cannot always be anticipated or controlled. However, educators can develop post-visit materials such as exhibition-related art reproductions, lessons, and games for visitors to take home or back to their classrooms.

# Designing Successful Interactive Learning Environments

*“This is a different kind of exhibition. It is not linear or chronological. There is no beginning or end. There is no right way or wrong way to go through it. It is not about imparting information. It is about your own experience.”*

*- Displayed at entrance to LACMALab interactive gallery*

## I. Interactivity Defined

For the purpose of this paper, I will adopt Adams and Moussouri’s definition of the word “interactive,” which they state refers to experiences that actively engage the visitor physically, intellectually, and emotionally. Similarly, they describe an interactive learning environment, or “gallery,” as a dedicated space that provides a social environment in which to actively explore objects and concepts (2).

Interactive learning is a relatively new concept for art museums, when compared to the extensive history of interaction in science and children’s museums. There is much art museums can learn from the experience science and children’s museums have in creating and administering interactive spaces. However, Adams and Moussouri note one fundamental and important difference: while science and children’s museums use interactive experiences to explain concepts or phenomena, the primary focus of art museums is on objects. Any interactive experience in an art museum should therefore support and enhance visitors’ engagement with, and comprehension of, art objects (6).

The art museum’s challenge is to design a successful interactive learning environment that engages multi-aged groups in the exploration of original objects through hands-on, mindful, and heartfelt learning experiences. In order to create such a

space, the museum must take into consideration the specific benefits and challenges of learning from original works of art.

## **II. Strategies for Success**

A successful interactive learning environment will accommodate the physical, educational, and emotional wants and needs of intergenerational groups. This is supported by recent research of current and potential family visitors at the Speed Art Museum, which found that parents want more museum amenities, more support and resources to introduce their children to art, and more opportunities for creative self-expression (Moreno and Dywan 5). Falk and Dierking suggest not only the interactive gallery environment, but also the entire museum, including the restaurant, rest rooms, and gift shop, should be accessible and creatively staged to support group interactions and learning experiences (Falk and Dierking 203).

### **Hands-on Considerations**

Although research suggests the museum cannot control what is learned by visitors in a free-choice environment, the museum *can* determine the physical and functional design of the space and exhibits to maximize the visitors' experience. Hands-on considerations for interactive gallery development should address accessibility, the physical requirements for supporting a multi-age social learning environment, and functional as well as aesthetic design. The appropriate use of technology should also be weighed in light of its strengths and weaknesses, and art-making stations made available for hands-on learning.

## Accessibility

Accessibility for people of all abilities, what is known as universal design, is a necessary consideration for the construction of any public space. A successful learning environment will address programmatic concerns as well, and be physically, socially, and intellectually accessible to the visitor. George Hein, in his book, *Learning in the Museum* (1998), quotes Burda's definition of universal design:

Technically speaking, universal design means creating environments and programs that provide opportunities for learning and enjoyment for all visitors, regardless of ability or disability, age, educational background, or preferred learning style. Practically speaking, universal design creates programs and services that are user friendly in the broadest sense. (168)

According to Adams and Moussouri, accessibility refers to the ease of access visitors have in understanding how to operate or engage with an interactive station. They state that text should be used sparingly and the “operation instructions” need to be self-evident to those who can't read, and those who are supervising children and have no time to read (15). Karen Satzman, Manager of Child and Family Programs at The Boone Children's Gallery, Los Angeles County Museum of Art, states their most successful activities for *The Pharaoh's World* exhibition—an archeological sand dig, amulet-making with pipe cleaners and beads, and their hieroglyphs table—require no directions or technology. Falk and Dierking suggest learning environments should abstain from an abundance of text and instructions and be designed so the learner can intuitively navigate the space and exhibits (202).

## Social Considerations

The most successful activities are those that can accommodate a small group rather than one person at a time, therefore exhibits should be designed so a multi-age group can be seated and/or interact collaboratively and with ease (Satzman; Lenz). Hein and Alexander suggest that while the seemingly random activity of visitor groups in interactive learning environments cannot be predicted or directed by the designers of the space, these groups *will* respond to the objects and concepts, as well as to the color and design elements, displayed in the gallery (18). A common focus of interest, according to Falk and Dierking, will optimize learning for visitor groups (189-90). This focus could include the collaborative investigation of an art object or groups working together on a creative project or educational game.

## Design

In the Speed Art Museum's *Summative Evaluation Report*, researcher Marianna Adams sums up the successful elements of the museum's Art Sparks interactive gallery. According to Adams, the learning environment should be warm, welcoming, safe, and comfortable. Color, lighting, and design elements should be tasteful and relaxing, while communicating an environment supportive of creativity and play. Individual components of the environment must be safe, durable, easy to clean, and designed for flexibility and portability to accommodate a variety of uses and configurations. If original works of art are installed, a halogen track lighting system with lighting levels that meet conservation requirements is also essential (2-3).

Cynthia Moreno, Curator of Education at the Speed Art Museum, and Beverly Dywan of Design in Three Dimensions, state that good sightlines should be part of the design, so that caregivers and children can keep track of each other. They also advise to help families avoid over-stimulation, there should be a balance of “cool,” “warm,” and “hot” activities. Moreno and Dywan describe cool as quiet, focused, and cognitive activities such as puzzles and building projects. Warm indicates interpersonal or group activities, and hot describes the activities that are either kinesthetic or involve media or software (3-4).

Adams and Moussouri recommend the “temperature” of each interactive experience should be designed to fit the mood and tenor of the situation. If the art is playful in nature, then a noisy, kinesthetic experience is appropriate. A more serious subject needs to encourage subdued and reflective behavior (13). Clear messages about rules of interaction are essential so visitors can engage appropriately with each activity (Falk and Dierking 202).

## Technology

Technology should be used sparingly. Adams and Luke state if the technology resembles home or office computers, it will not be unique enough to pique interest. Also, computers and packaged software will quickly become outdated (9). Museum educators that have had experience with technology acknowledge it is great when it works, but too often technology stations are “out of order,” which is frustrating for both staff and visitors (Phillips; Satzman; Warren). Therefore, a rule of thumb might be to

employ technology creatively and only when a concept cannot be explored in any other way.

### Art-Making

Art-making is an especially appropriate hands-on activity for interactive learning in the art museum. “Low-tech” activities using basic art supplies and/or recycled materials are easy on the budget, require minimal maintenance, and satisfy the visitors’ need to “touch and do.”

According to the Frist Center for the Visual Arts’ *ArtQuest Peer Institution Survey Results* of thirteen art institutions, art-making was cited as one of the most popular activities in their interactive galleries (Henderson and Certo-Hayes 3). Carole Genshaft states that the most loved parts of the Eye Spy: Adventures in Art interactive gallery at the Columbus Museum of Art are the art and dress-up activities. She says, “Generally speaking, we could have done almost every aspect of the exhibition via some kind of computer program, CD, etc. But visitors come to an art museum and like to ‘do art.’” Elsa Lenz, ARTery Specialist at the John Michael Kohler Arts Center in Wisconsin, points out logistical considerations for a successful art station should include easy access to all art materials, simple and concise directions for the art-making process, concrete examples of the project, and a clear sense of the activity’s time commitment.

### **Mindful Considerations**

Creating an interactive learning environment that is mindful requires designing content and providing contexts for multiple types of learners and various levels of

knowledge and skill (Falk and Dierking 188; Lenz). The powerful ability of art to engage learners, enhance learning, and foster curricular connections should be employed as well.

### Multimodality for Social Learning

To ensure the exhibit activities accommodate multimodal learning, Howard Gardner's multiple intelligence theory can be referenced as a model that describes intelligence strengths such as kinesthetic, logical, spatial, musical, linguistic, interpersonal, and intrapersonal. Since research shows families construct meaning through conversation (Ash et al cited in Adams and Luke 5-6; Edwards 4), interactive spaces should be designed to accommodate the social and learning needs of multi-generational visitors. Falk and Dierking recommend allowing the child considerable autonomy with their social group and, hopefully, the opportunity to be the facilitator for family experiences (187).

With child development research in mind, the interactive activities should be conceptually appropriate for different ages and have multi-generational appeal (Edwards 4). The learning experiences should also be layered in complexity to accommodate various levels of ability and encourage engaged participation, experimentation, and problem-solving (Moreno and Dywan 4; Falk and Dierking 188). Offering a wide variety of activities that match various skill levels will ensure individual visitors are neither bored nor frustrated (Watts 2).

## Artful Thinking

Viktor Lowenfeld, considered by some to be the most influential art educator of the 20th century, stated, “We emphasize [the] accumulation of knowledge [...] rather than cultivate the use of our knowledge freely and creatively [...]” (16). Engagement with art enhances creative use of knowledge as well as critical thinking and problem solving skills, by fostering close observation and analytical discussion (Blake 2). Since parents and teachers often do not have a strong art background, many are not confident engaging in the subject with young people. The content of the interactive learning activities should, therefore, allow for non-threatening exploration of art concepts and processes, and how the visual language is used to explore and express ideas (Watts 2). Interdisciplinary connections, reflecting state or national arts and humanities content guidelines, should be explicitly present in the learning content as well.

## Heartfelt Considerations

Enjoyment is at the heart of heartfelt learning. In order to create an enjoyable experience, the learning environment and activities must be unique yet familiar, involve play and creativity, and be pleasant and memorable. Enjoyable experiences not only result in enhanced learning, they also create opportunities for visitors to connect with one another, with the museum, and with the notion of life-long learning.

Art-making can also be employed as a heartfelt way of learning through creative expression, while connecting learning to the museum’s original artworks provides a unique and rich experience.

## Uniquely Familiar

A study at the High Museum of Art suggests that while visitors want to have unique experiences at the museum, they do not want to be confronted by something so unusual they cannot figure out what to do fairly quickly (Forbes, Hill, and Adams 3). Learners tend to ignore or reject concepts, technology, and art that they feel is foreign or irrelevant to them, which poses a particular problem for connecting to contemporary art (Adams and Moussouri 16).

Falk and Dierking and others suggest for very familiar content or experiences, there needs to be a distinct twist to the educational approach. For unfamiliar content, there should be a reference point that will enable the learner to comfortably engage with the subject matter and make the learning experience their own (188; Hein 38).

Furthermore, activities should link to and reinforce visitors' prior knowledge, while introducing new concepts and ideas to reshape the learners' understandings (188; Adams and Moussouri 14-15). In other words, the visitor should be free to pursue his/her own interests while challenged to form new connections in the personal meaning-making experience.

Developing activities that encourage play and creativity is one of the most effective ways to foster heartfelt learning. Bradburne states a very challenging type of play is games. He notes a true game structures play and provides goals and closure rules. Educational games will encourage the players to be voluntary learners, where they are challenged to acquire new skills, improve performance, and return to an essentially new experience each time they visit (10-11). One example of the successful employment of games in an interactive gallery can be found in the Just for Fun Family

Center at the Denver Art Museum. Their staff has successfully customized common games and toys, such as matching games and magnet boards, to help teach about concepts related to the museum's permanent collection.

#### Staffing: The Human Touch

A standard feature for any learning environment should include the presence of a “real person” to help facilitate a quality experience. It is a common practice in American children's and science museums to have attending staff, but many art museums that have interactive spaces rely on volunteers for only periodic staffing. As a result of her summative report for the Art Sparks interactive gallery, Adams stresses the importance of providing adequate staff to facilitate visitor learning and exploration noting, “Making a case for the importance of adequate staffing in an art museum hands-on space has been a challenge” (3). To provide a heartfelt experience for visitors, staff will not only be needed to ensure the gallery is clean, stocked, and in good working order, but also to design innovative programming and offer consistent, helpful, and friendly service.

#### Artful Engagement

Making personal connections with and through art is an excellent way to foster engaged creativity and meaning-making. Lowenfeld believed the unfolding of the individual's creative potential is one of the most significant contributions that education can make (Lowenfeld 37). Providing art-exploration activities that are open-ended and process-oriented will ensure that learners use the higher order thinking skills associated

with creative expression. These activities should reflect the museum's unique qualities, its mission, and its values. To this end, art objects should either be displayed in the space or explicit connections made to the ideas and concepts inherent to objects in the museum's collection and/or exhibitions. If the space is designed as a generic alternative to the "real" galleries, it will serve only as an experience that could be implemented anywhere.

Often museums have found it difficult to transition the interactive experience to their traditional art galleries. Many art museums do not include original works of art in their learning environments out of concern for the objects' safety. Edwards explains that by installing replicated artwork, which can be viewed and/or handled without worry of undue exposure to light or sticky fingers, museum practitioners can develop conceptual links to the actual objects in the galleries. The hope is that the interactive experience will then be followed by direct experiences with the original artwork (3). Adams and Moussouri have found the main barrier to be overcome is parents' fear that if they bring their children into the galleries, they will misbehave or be bored with "just looking" (5). Despite this, evaluation conducted at the Speed Art Museum and the Los Angeles County Museum of Art suggests that, because of their interactive experiences in Art Sparks and The Boone Children's Gallery, families do extend their visit into the art galleries (Adams and Moussouri 5; Satzman).

Offering activities that directly connect the interactive learning environment with the art in the galleries also encourages families to venture into the galleries. Several museums offer groups gallery guides or activity packs that can be used as resources for exploring the museum's original artwork. When deciding whether or not

to connect the interactive experience to original art, the museum's values must be considered: Why was the decision to create an interactive learning environment made in the first place? Should the interactive experience include the presence of original works of art, or replicas to inspire people to explore the artwork in the formal galleries? Is the space designed as an alternative experience to the galleries, or as a motivation for school groups and families to visit the rest of the museum?

Adams and Luke state that while there is no one right way to design an interactive gallery, museum practitioners are often steadfast in their varied but firmly held beliefs (6). These range from decisions to keep original objects safely situated in the traditional galleries (Edwards 3; Forbes, Hill, and Adams 2), to the idea that using replicas in the interactive learning space creates confusion about "authenticity," that housing original works in Plexiglas barriers is "emotionally and intellectually off-putting," and that insulating the interactive experience from the "real art objects" in the rest of the museum sends families and children the wrong message (Blake 1-2). The consensus, however, is that whatever a museum's beliefs and values, the original works of art should be the focus of learning.

While some museum professionals tout interactive learning environments as the "saving grace" of museums facing declining attendance, controversy persists among those who feel this educational approach betrays tradition by selling out to popular culture. Whether one believes museum educational practice should court audiences or be bound by tradition, art museums must employ a thoughtful and probing self-analysis to remain a relevant and vital community resource. This process, though sometimes

painful, has historical precedence that can shed light on how American art museums have evolved in a changing world.

## Rethinking the Museum Experience

*“The German word museal (museum like) has unpleasant overtones. It describes objects to which the observer no longer has a vital relationship and which are in the process of dying. Museum and mausoleum are connected by more than phonetic association. Museums are the family sepulchers of works of art.”*  
*- Theodor W. Adorno*

In her book *Re-Imagining the Museum: Beyond the Mausoleum*, Andrea Witcomb discusses the above quote from Theodor W. Adorno’s 1967 article, “Valéry Proust Museum.” Witcomb states Adorno’s premise is that museums “kill” objects by up-rooting them from their original contexts in order to present the object in a purely aesthetic milieu. She notes in order to overcome this modernist-inspired elitism and justify their existence, museums have had to reinvent themselves to become a relevant and vital presence in their communities, provide greater access to diverse populations, and compete in an increasingly aggressive tourist industry (102-04). There is much debate as to whether these changes are beneficial or destructive to the arguably “inherent” nature of museums. A review of the history of American art museums, however, reveals that museums have been in a constant state of reinventing themselves, and today’s challenges are not as exceptional as one may think.

From the time of the American Revolution, many Americans have viewed the fine arts as luxuries of a decadent aristocracy. It was this mind-set that prompted Benjamin Franklin to say, “To America, one school master is worth a dozen poets.” In order to appease a pragmatic public, art museums in America have a long history of emphasizing their “usefulness” by touting their educational benefits (Zeller 34-36). An example of this approach is revealed in the words of John Cotton Dana, director of the

Newark Museum and a well known advocate for education in art museums. He encouraged museums to “entertain” and “instruct” stating, “A museum is good only in so far as it is of use” (qtd. in Zeller 36).

American museums also have a history of expressing progressive and egalitarian ideals. In the late 1800s, George Brown Goode of the Smithsonian Institution encouraged museums to set aside the past and transform themselves from “a cemetery of bric-a-brac into a nursery of living thoughts” (qtd. in Zeller 33). Arthur Casewell Parker of the Rochester Museum of Arts and Sciences proposed in 1925 that museums become more democratic and inclusive, stating museums are for the “common man” as well as the “uncommon man,” and that people want a feeling of personal contact with art, rather than reading long “boring labels” (qtd. in Zeller 36-37).

It is interesting to note that not every museum in the world was in favor of the populist approach. In the mid 1800s, German art historian, Gustav Waagen, stated that the National Gallery in London “had all the appearance of a large nursery, several wet nurses having regularly encamped there with their babies for hours together [...]” (qtd. in Witcomb 24). Thomas Uwins informed the committee for the 1853 Government Report on the National Gallery that Mondays were “when a large number of the lower classes of people assemble there, and men and women bring their families of children [...] and they are subject to all the little accidents that happen with children, which are constantly visible on the floors of the place” (qtd. in Witcomb 25).

Back in America, museum education was viewed by some as an unnecessary distraction. At the Metropolitan Museum of Art and Brooklyn Museum of Art, teaching tools such as replicas of antique sculpture and original costumes and furnishings were

removed from the galleries by curators, who felt the objects detracted from a pure aesthetic encounter with the art (Zeller 56, 58). Others, such as Francis Henry Taylor, director of the Worcester and Metropolitan art museums (1931–57), criticized museums for favoring membership and attendance over aesthetic considerations. He believed museums should look to the past when the educational goal was to serve the community by cultivating refined aesthetic taste (Zeller 60-61).

In spite of opposition, the education movement in art museums continued to strengthen and grow. In 1930, the Cincinnati Art Museum established a separate education department and opened a Children's Museum in 1938 (Zeller 63-64). The Brooklyn Museum of Art's director, Philip N. Youtz, sought to overcome the public's indifference toward art museums by replacing "discipline and arduous drill" in favor of "a vital [...] experience which has most of the features of recreation" (qtd. in Zeller 70).

Victor D'Amico, head of the education department at the Museum of Modern Art from 1937 to 1970, developed a program called "Children's Carnival of Modern Art," which included an "inspirational" gallery of artwork and a studio space for making art, thereby expanding on the child-centered, learning-by-doing philosophy of Dewey (qtd. in Zeller 64). Roberts notes another early example of an interactive learning space was The Game Room at the Fine Arts Museums of San Francisco, which was "designed as the art world's answer to the participatory learning stations so popular at science museums" (qtd. in Metzger 28).

The Toledo Museum of Art developed special hands-on programs for both blind and deaf children in 1919. In 1960, the museum's director, Otto Wittmann, installed electronic Art-A-Facts machines, called "squawk boxes" by aesthetic purists, to inform

visitors “where and when the art was created, what it represents and why it is significant” (quoted in Zeller 74). The Art Institute of Chicago opened The Children’s Museum in 1926. The Children’s Museum became the Gallery of Art Interpretation in 1940, with Katherine Kuh as its curator and Mies Van der Rohe designing several exhibitions. In 1964, the Art Institute’s Woman’s Board founded the Junior Museum, which developed exhibitions of original works of art for school children (Sousa 1).

Today both the Toledo Museum of Art and the Art Institute of Chicago continue their commitment to interactive learning. The Toledo Museum’s web site describes their “Family Center” as a free hands-on play space and art studio created just for families. Its stated purpose is that it is a great way to introduce children to the museum. The Art Institute of Chicago’s 2,500 square foot Hammerman Gallery, which opened in 1991, displays original artwork from the Art Institute’s collections. Providing interpretation and accessibility to children is the Hammerman Gallery’s primary mission (Sousa 1).

From the latter part of the twentieth century to the present, the educational shift from text-based learning to interactive engagement with objects has increased the value of museums in the public eye (Hein 6). Likewise, as the world has evolved from an industrial to a knowledge-based economy, learning experiences have become a significant aspect of our social and economic lives (Falk and Dierking 1).

Falk and the Association of Science-Technology Centers have determined that in America today, museums, along with shopping and sports, are considered the most popular leisure pastimes (cited in Falk and Dierking 2). Art museums that have developed interactive galleries, usually do so to provide pleasurable learning opportunities for multi-generational groups and to challenge perceptions that art

museums are elitist and boring (Blake 1; Edwards 1; Adams and Moussouri 2-3). Those who take pleasure in learning consider the museum offerings both educational and entertaining, thus constituting the complementary qualities of the leisure experience (Falk and Dierking 73).

B. Joseph Pine II and James H. Gilmore, in their book *The Experience Economy* (1999), describe a new economic era. They believe the current market favors designing memorable events for paying customers, stating, “Staging experiences is not about entertaining customers; it’s about engaging them [...]. Experiences are events that engage individuals in a personal way” (qtd. in Falk and Dierking 177). According to David Miller, president of the Toy Manufacturers of America, “Family entertainment and education is where the business is” (qtd. in Falk and Dierking 214). Haggerty and Milner further attest that the shopping mall industry believes its future ability to attract and hold customers will rest upon the inclusion of interactive learning centers within the mall structure (cited in Falk and Dierking 214).

The public, however, expects museums to provide higher quality learning experiences than theme parks or shopping malls. Therefore, the future success of museums depends upon recognizing and proactively capturing their niche in the leisure market (Falk and Dierking 224, 232). Following Pine and Gilmore’s recommendations, art museums need to utilize the unique hands-on, mindful, and heartfelt creativity that art brings to the learning experience in order to favorably position themselves in the experience economy.

## Planning Considerations

*“[...] be willing to “play” with ideas, to be comfortable not knowing all the answers and joy in the process of discovery, to share experiences with others, to value different perspectives [...]. The spirit with which the space is designed will be reflected in the final product.”*

*- Speed Art Museum*

An important step in the development of an interactive learning environment involves assessing the museum’s logistical and financial capacity for planning, implementing, staffing, and programming such a space. Timelines, staff requirements, planning strategies, and budget decisions must accommodate the nature, culture, values, mission, and financial situation of the institution. The planning considerations outlined here represent the combined experiences of several museum practitioners, who have planned, implemented, and/or administered an interactive learning environment in the art museum setting. While each museum’s situation is unique, much can be learned from the collective experiences of others.

### **I. Reality Check**

People with vision are necessary for helping an organization realize its ultimate potential. The vision, however, must be matched step by step with hard work, deep pockets, and solid commitment from both within and without the museum. Unfortunately, we often find ourselves “out of step” because of the enormity of the task, the number of people involved, and the reality that sometimes undermines our best intentions. Dawn Low, Education Director at the Fuller Craft Museum in Maine states:

Honestly, if there [were] a rubric here 10 years ago (when this gallery was originally conceptualized), I don't know that the Museum would have taken on the project at all [...]. If we had gone through more navel gazing to determine if we had the staffing, planning and resources back in the late 1990's, the staff at that time might have realized that it was a great idea that needed more internal development before proceeding. Yesterday I spent most of the day planning the agenda for a meeting today on our gallery. So already I can see where much of my time is going over the next 18 months."

Before proceeding with the development of an interactive learning environment, the ability of the organization to successfully plan, implement, and manage the project should be weighed and analyzed. The experiences of museum education professionals, along with the information presented in the *ArtQuest Peer Institution Survey Results* document, are excellent resources for planning. Another great resource is the *Two-Day Design Planning Workshop for the Speed Art Museum* report, which details the planning process they used for revamping their Art Sparks interactive gallery.

### **Capital and On-going Expenses**

Often initial funding for developing an interactive gallery comes from a one-time donor such as an individual, foundation, business, or corporation. Once the space is open, however, on-going operational costs must be anticipated. Operating costs may include training volunteers (yes, volunteers are never free!), maintenance and repairs, art supplies, exhibit component replacements, cleaning supplies, and most importantly, staff salaries. New or existing staff will not only be needed to clean, monitor, and maintain the space, but also, if the museum values dynamic programming, one or more qualified educators will be needed to constantly design new exhibits and activities (Low; Genshaft; Henderson).

Fiona Godfrey, developer of the Fantasmic interactive exhibition at the Centre for Visual Arts (CVA) in Cardiff, England, says her organization learned about on-going finances the hard way. After successfully raising £750,00 to design and build the Fantasmic interactive exhibition, the CVA closed just a year later due to a lack of program funding. Godfrey states, “Many organizations are being forced along a similar route – with generous capital funds being provided to spend on design and building, but with programmes then having to function on a shoestring” (1, 4).

### **Square Footage/Cost of Development**

According to the *ArtQuest Peer Institution Survey* respondents, the square footage of their interactive spaces varies from less than 1,000 square feet to over 14,000 square feet with capacities that average around one person per 50 square feet. In my 2005 discussions with exhibit designers, Beverly Dywan of Design in 3 Dimensions and John Paul Haynes of the InterActive Group at TRIAD, they estimated the cost for designing, fabricating, and installing an art museum interactive space at approximately \$150-\$300 per square foot. This variation depends largely upon the amount of technology desired and renovation needed for the planned space. Inflation, gas prices, and natural disasters will also affect the price, which is safe to say, will increase over time.

### **Annual Operating Costs**

Not all museums reported their interactive gallery annual budgets for the *ArtQuest Peer Institution Survey*. Of the budgets that were reported, not all included

salaries in their figures, therefore the annual costs varied greatly from \$8,500 for “basic expenses” to \$125,000 “excluding salaries.” Because there is such a difference in galleries and their financial and staffing needs, the best way to get pertinent information about budgets is to personally ask for it. This would require research to find existing interactive galleries that best match your intended size and type of learning space. For instance, a large gallery with a lot of technology and art-making stations, such as the Frist’s ArtQuest interactive gallery, would require a larger budget to accommodate more staff, maintenance, and supplies than the Denver Art Museum’s smaller, “high touch” gallery.

### **Internal Roles and Responsibilities**

An important consideration in determining a museum’s capacity to take on the development of an interactive gallery is having support and resources from the rest of the staff. Dawn Low, Education Director at the Fuller Craft Museum, states the planning and administration of the space should involve all departments, including education, curatorial, maintenance, visitor services, development, finance, marketing, and volunteer services. Potential project killers, according to Frane and Predock, are turf wars, design by committee, information overload, too many cooks, aesthetic purists, and big egos. They believe the ideal process will involve an organization-wide consensus of conceptual ideology, understanding of logistics, and rigorous commitment to collaboration (1).

## **Potential Revenue**

At some point the planning team will have to decide what to charge, or *if* to charge, admission. Often finances dictate this decision, however a museum's values must be taken into consideration as well. How much is too much for your particular community? How much is too little? Will low income families and schools be included or excluded by your admission prices? If you decide admission is free, how will that affect the sale of family memberships?

Marla K. Shoemaker, Senior Curator of Education at the Philadelphia Museum of Art (PMA) states, "I am always pushing for all our programs to be available to everyone. Our whole museum is basically free each Sunday—we have a 'pay what you wish' policy—so we get a big, diverse crowd on Sundays and that is when we do our Family Programs." Following the admission policy of the Boston Museum of Fine Arts, PMA admits children under 12 for free which, according to Shoemaker, does cause problems in selling family memberships.

Frist Center for the Visual Arts director of education, Anne Henderson, says their museum admission charge is \$8.50 for adults. Members and persons 18 and under are free. The Frist is trying to find a way for adults accompanying their children to ArtQuest to get in free, but have not yet found a viable way to do so. At the Jordan Schnitzer Museum of Art, Director of Education/Adjunct Associate Professor, Lisa Abia-Smith, states their Interactive Discovery Gallery is located in the "free zone" of the museum. They did this for many reasons, but mostly because the attendance at their quarterly Free Family Days is comprised of 55% who define themselves as low income.

Admission to The Boone Children's Gallery at the Los Angeles County Museum of Art (LACMA) is free for everyone. Karen Satzman, Manager of Child and Family Programs at The Boone Children's Gallery says since they instituted the NexGen free youth membership program, allowing a child member and one adult “guest” free admission for the whole museum, the response has been amazing. They now have 40,000 NexGen members, which has not negatively impacted regular museum membership sales.

As we have seen, several museums offer free admission to their interactive galleries, at least part of the time, to accommodate all families in the community. Usually this decision is related to the mission, rather than the museum’s bottom line. To make up for the loss of income, other forms of revenue can be considered, including rentals of the space for corporate “team building” events, birthday parties, or other special events.

### **Staffing**

Laura Metzger’s research of three art museum interactive spaces found the lack of adequate staff and governing rules to be a serious problem. She reports children were often left unsupervised in the gallery, and while conducting her observations, visitors often approached her to answer their questions or help with malfunctioning technology. The assistant director of education for one of the galleries stated she wished there were volunteers in the interactive space at all times because the gallery “[...] works best when [someone is] in it” (qtd. in Metzger 105-06).

Conversely, the ArtQuest interactive gallery at the Frist Center for the Visual Arts has a full time educator, who is assisted by several facilitators, interns, and volunteers. The interactive space has many art-making stations, including printmaking, which necessitates the considerable involvement of staff in monitoring activities and cleanup. Repairs are done by education and maintenance staff, and outside contractors (Certo-Hayes).

## **II. Planning Tips**

Selecting the planning team, determining the mission and target audience, choosing content, and prototyping ideas are important steps in the planning process. The most important factor to remember throughout the process is the viewpoint of the potential users of the learning environment.

### **Selecting the Planning Team**

The multiple perspectives from potential audience and all levels of the museum's organizational structure should be sought from the beginning and formalized in the make-up of the planning team. The objective should be to create an environment where diverse viewpoints will challenge each team member to weigh ideas and think differently. If the planning team is to make informed decisions, they will need to solicit input from staff, volunteers, community members (young and old), and experienced museum professionals through brainstorming workshops, interviews, and visits to established interactive learning sites (Frane and Predock 1; Exley 3; Edwards 3).

Since adults will be well represented in the decision making and development process, it behooves the museum to consider the words of Antoine de Saint-Exupery's Little Prince, who stated, "[...] grown-ups never understand anything for themselves, and it is tiresome for children to be always and forever explaining things to them." Perhaps we would understand what children are trying to explain, if only we would *listen* when they speak. According to Crain, it is important that children be included in the planning process so that their interests and needs are considered (cited in Ringel 6). Children can generate ideas, inform content, and test prototypes for functional and educational successes and failures (Genshaft; Sousa 2).

### **Determining the Mission**

Researchers Marianna Adams and Jessica Luke suggest that once the planning team is formed, the members should decide the what, why, and for whom of the interactive gallery experience so everyone has a clear picture of what is to be accomplished (2). The environment should support the overall mission of the museum, but also have its own mission statement that reflects the educational philosophy and values of the organization (4-5). Suzy Watts, developer of the ArtQuest interactive gallery at the Frist Center for the Visual Arts, recommends the planning team should determine the "enduring understandings" (abstract in nature) that will best assist the art audience's learning experience, what visitors will need to know (critical concepts) and do (skills and processes), and how the visitors will "be" (attitudes, habits of mind, dispositions) (6).

Most *ArtQuest Peer Institution Survey* respondents indicated they have mission statements that emphasize being child- or family-centered, using hands-on learning experiences to enhance the appreciation and understanding of art and aid the development of life-long learning. Presenters at the *From Content to Play: Family-Oriented Interactive Spaces in Art and History Museums* symposium at the J. Paul Getty Museum stressed the optimum learning experience should be intuitive, open-ended, multi-modal, and flexible; offer opportunities for making personal connections and meaning rather than communicating large amounts of factual information; and foster a deeper relationship between the audience and the museum (Adams and Luke 3; Forbes, Hill, and Adams 2).

The planning team must be clear about the educational philosophy and learning outcomes for the planned educational space. Most museum practitioners adopt the discovery or constructivist pedagogy for their educational exhibits. Interactive learning that is based on the discovery method, such as the Frist's ArtQuest interactive gallery, has more text and instructions, and the anticipated outcomes are specifically defined according to a perceived "truth" to be discovered. The constructivist environment will provide little instruction, relying upon the visitors' open-ended exploration of the activities. Adams and Luke suggest an "outcome" in the constructivist model might be that the visitor has an open-ended, immersive experience facilitated through creative play.

In terms of learning, the constructivist approach, which does not require "right" answers, seems to be a favorite among museums (5). When study participants at the High Museum of Art were presented with proposed activities, they quickly weeded out

those that were didactic and overly structured (Forbes, Hill, and Adams 4). According to Hein and Alexander, empirical data has documented that visitors will favor using trial-and-error methods at interactive exhibits over reading instructions, therefore they suggest interactive activities should be designed to be used intuitively (14). Patterson Williams, Master Teacher for Asian and Textile Art at the Denver Art Museum states that when planning their interactive space their battle cries became, “get rid of instructions” and “make it intuitive” (2). Rebecca Edwards, Education Specialist for Family Audiences at the J. Paul Getty Museum, says in spite of criticism for its lack of “information” about the art, the Getty Family Room fully embraces its constructivist philosophy (7).

### **Determining the Target Audience**

The team should be clear about the kind of audience that will be the focus of the gallery design. Will it serve primarily members and their families or a diverse audience? Will it target children or people of all ages? Will the interactive space function to serve school groups, which have a different child/adult ratio than families and their own particular educational and logistical needs? The planning team needs to determine what educational experiences might be sacrificed and what can be gained by designing learning experiences that accommodate widely diverse audiences. In most cases one audience, usually families, is the priority, with adaptations made to accommodate school groups as a secondary audience (Adams and Luke 3; Henderson and Certo-Hayes 3; Edwards 5-6).

The audience designated by the project team should reflect the values of the museum. Adams and Luke suggest that if a museum touts itself as a place for and about families, then this value should be reflected in the museum's actions. The presence of interactive learning in the art museum presents a situation, where activity and contemplation, touching and no-touching, conversation and silence must exist under one roof in a complementary and accepted way (7). Museum staff must come to terms with this dichotomous situation or risk sending mixed messages to an already wary family audience.

### **Choosing Content**

The content of an interactive learning environment must be chosen carefully, so the visitors can have a unique experience through a familiar point of reference. The content should also be kept simple to avoid information overload. Adams and Luke warn that when caught between teaching content and keeping activities open-ended, educators often “try to do it all, consequently doing neither very successfully” (8). MacRae suggests the art objects to be explored should be chosen for their potential to interest the visitors and comfortably engage them with difficult or unfamiliar concepts (2, 6). I would add that both artistic value and content be taken into consideration to provide learners an all-around quality experience.

The Speed Art Museum has developed a “Criteria Rating Checklist” for assessing the content of each station/activity in their Art Sparks interactive gallery. The checklist is used to rank the functionality and content of the stations, using a rating system from 1 to 4 (e.g. poor to excellent, cursory to rich, fairly standard to very

unusual/new perspective). This method of assessment is useful for addressing a wide range of criteria.

### **III. Evaluation**

As museum professionals, we are aware of the need for evaluation to justify our ideas, our values, and sometimes even our reason for existing. Unfortunately, we do not always find the time to elicit evaluative information from our audiences. Falk and Dierking advise that several kinds of evaluation, including prototyping, as well as front-end, formative, remedial, and summative, should be used to help design and maintain better, more learner-centered museum experiences (203).

To confirm that a great idea on paper actually works in reality requires testing and prototyping. Williams states that at the Denver Art Museum “real families” tested their activities, which meant that the education staff had to be willing to make the sometimes painful changes and cuts that are critical for success (3). According to architects Peter and Sharon Exley, if ideas are tried and tested, they will flourish as the museum continues through the design, fabrication, and installation phases of development. They go on to advise that adaptive design and qualified staff are required to ensure the learning environment will continue to evolve and change through innovative and dynamic programming of the space (4). Conversely, if a poor idea is carried forward, valuable time and dollars will be lost.

Front-end evaluation conducted at the J. Paul Getty Family Room resulted in the creation of a space that meets the specific needs identified by families: a comfortable, relaxing, and safe space; activities that are intuitive and non-reliant on language as a

mechanism of conveying ideas; and touchable, self-directed activities that are suitable for the high energy level of the audience (Edwards 2). In order to maintain the quality of their exhibits, educators at the Frist Center's ArtQuest interactive gallery collect evaluative information through formal and informal assessment of individual stations, direct observation, visitor feedback, and attendance numbers (Henderson and Certo-Hayes 2). Summative evaluation was used at the Speed Art Museum to renovate the existing Art Sparks interactive space to meet the specific learning needs of their audience.

### **What to Measure**

In most cases, museums rely on both quantitative and qualitative evaluation. Quantitative evaluation includes attendance, visitor dwell time in the museum, memberships sold, grants received, and other factors that can be measured in numerical units. Qualitative evaluation includes assessing visitor expectations, perceptions, experiences, relationships, engagement, and meaning-making (Moreno and Dywan 4; Sain and Fisher 4; Adams 6). Measuring the "quality" of an experience is the task that is most challenging for museum practitioners.

### **Measuring Quality**

In order to effectively measure qualitative experiences, museums must gather information in innovative ways. Methods used at the Speed Art Museum include "cheap and cheerful" visitor studies with families using Idea Cards, which give a brief description of an idea and ask for the visitor's response (Moreno and Dywan 4). The

Speed staff also use Personal Meaning Mapping, an evaluation tool created by John Falk and designed to document an individual's personal construction of meaning. This methodology does not seek right or wrong answers. Rather, it can be used to measure before and after differences in the quantity and quality of responses to a museum experience or encounter with art (Falk and Dierking 78, 167).

In the *Summative Evaluation Report* for the Art Sparks gallery, researcher Marianna Adams describes the Personal Meaning Mapping learning parameters as focusing on the extent of a person's vocabulary, breadth of understanding, depth of understanding, and the facility with which someone uses their understanding (37). Studies show that over time, students' descriptions that begin with lists and literal descriptions will evolve into story, metaphor, and meaning-making. Obtaining descriptions from students about works of art through Personal Meaning Mapping can reveal the development of their critical and analytical thinking skills (Adams and Moussouri 5-6).

Staff at the Frist's ArtQuest interactive gallery use outcome-based evaluation to measure learning. Suzy Watts, developer of the ArtQuest gallery, suggests activity stations should be designed with outcome-based evaluation in mind, using a variety of embedded assessment strategies to measure learning (3). Objectives, assessment criteria, assessment strategies, and evidence of learning all relate to the assigned "Enduring Understanding" inherent in each learning station theme. For instance, the ArtQuest staff use the following imbedded evaluation criteria for their "Where Is It in Space?" station:

**Enduring Understanding** – Objects can be described by their location in space.

**Objective** – Visitor describes the placement of an object in relation to another object within a work of art. Visitor changes the meaning of the work of art by changing the placement of an object.

**Assessment Criteria** – Visitor identifies the relationship of one object to another within a work of art by using a pre-positioned icon. Visitor creates a new relationship between two objects.

**Evidence of Learning** – Checklist or photograph of magnet placement.

**Assessment Strategies** – Type: Checklist; Frequency: Bi-monthly; Sampling: 4 preschoolers, 6 students, 4 young adults, 6 adults.

Evaluation often ranks with defining an educational philosophy as the “heavy-duty” work that sinks to the bottom of museum educators’ to-do lists. Adams and Moussouri state in cases where evaluations *have* been conducted, most of the findings remain unpublished and, consequently, not easily accessible to busy museum practitioners. They encourage museum educators to collaborate in developing a cohesive research agenda and efficient means to share findings (17).

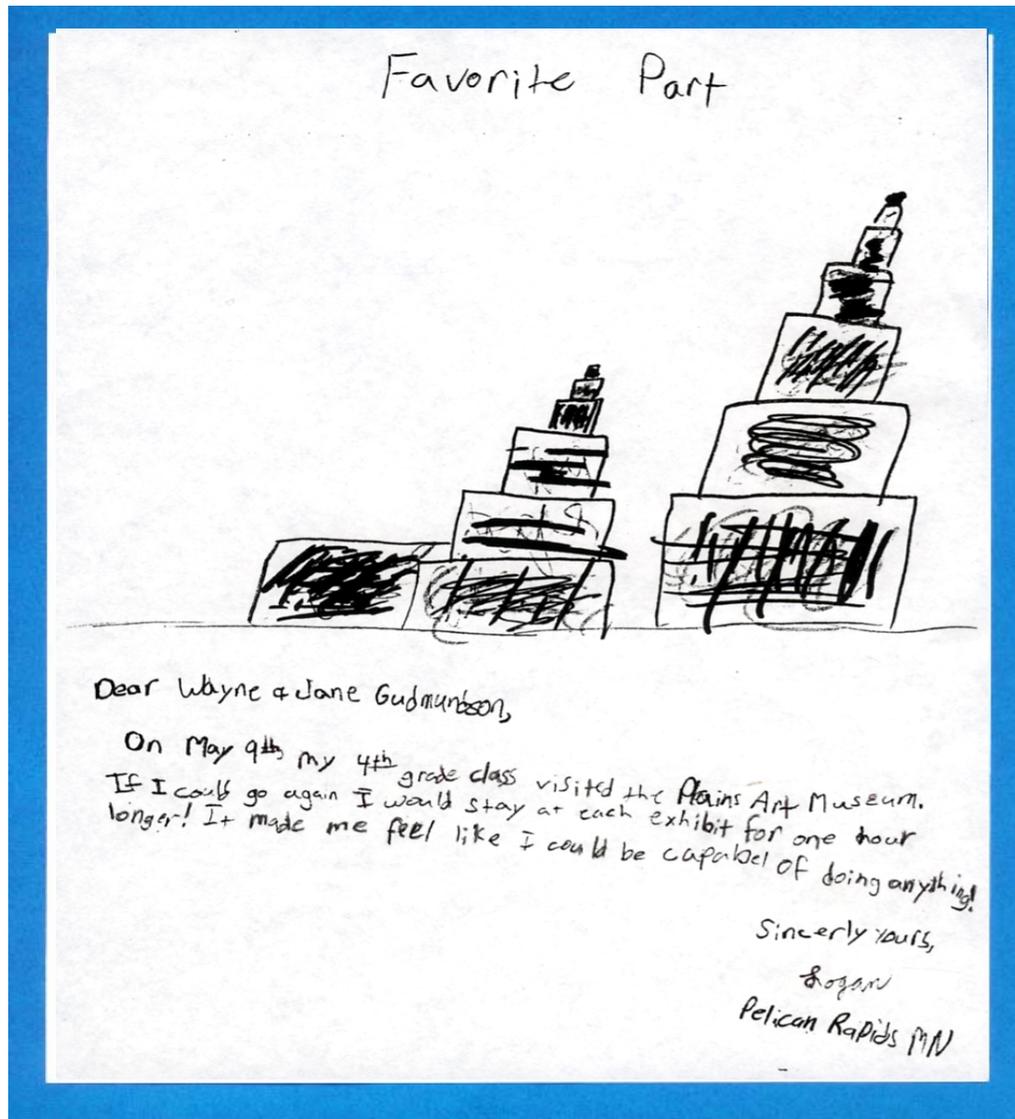
## Conclusion

*“No parallel to microwaves has yet been discovered for learning. Ideas still need to ‘percolate,’ ‘simmer,’ or ‘stew’ if they are to end up more than ‘half-baked.’”  
- George E. Hein*

In early June 2005, hundreds of museum professionals gathered from all over the North American continent to attend *From Content to Play: Family-Oriented Interactive Spaces in Art and History Museums*, a symposium hosted by the J. Paul Getty Museum in Los Angeles, California. The large turnout far surpassed the Getty’s expectations, illustrating that interest in interactive learning has reached critical mass in the United States. While it was generally acknowledged there is no single strategy for developing interactive spaces in art museums, there are some basic guidelines that can direct a museum’s planning process. Adams and Luke summarized these by advising the audience to “take risks; work from your heart; take your work seriously, but not yourself; and learn from successes and failures” (9-10).

If the genesis of an interactive learning environment involves adopting an educational philosophy, then evaluation will elicit the practical and profound revelations required for continued success. Everything in between entails hard work (and often long hours), thoughtful research, and a sense of play. In other words, the process of developing an interactive learning environment in the art museum is, in itself, a hands-on, mindful, and heartfelt learning experience.

The following letter, written to benefactors of the Plains Art Museum, sums up the kind of experience we envision for our audience.



Our goal as art museum educators should be to create dynamic learning experiences. If we succeed, the prospect of a visit to the art museum will generate anticipation rather than dread. The experience itself will produce enthusiasm instead of boredom. And, above all, the result of the experience will be meaningful, memorable, and perhaps, life-changing.

# **FingerPrints Interactive Gallery**

## **A Case Study**

The Plains Art Museum in Fargo, North Dakota, embarked on a journey into unfamiliar territory when the museum's CEO and President asked me, as Curator of Education, to take on the responsibility of researching and facilitating the planning of an interactive learning environment. This case study describes the experiences and insights we have amassed during the planning process, which began with the initial December 2004 meeting and culminated in November 2005 with the completion of our concept design. I have attempted to document the process so that other museum professionals might have a guideline of reference for their work—something we would have found beneficial throughout our planning process. As of this writing, we have not yet secured the necessary funds to complete the project; however, our museum is working diligently on a capital campaign that will allow us to fabricate, install, and implement our proposed FingerPrints Interactive Gallery.

### **Initiating the Process: December 2004**

Our museum's CEO had talked about implementing an interactive gallery from the time he was hired in 2003, and he initiated the project a year later in a meeting with the Vice President of Curatorial and Education and me. The CEO gave me my assignment: to facilitate the planning of an interactive learning environment, which would replace the second floor administrative offices. The office space is 1,178 square feet and is lined with windows, visible to the public, and taking up prime museum "real

estate” that would be better used for programming. A 420 square foot resource library adjoins the space, and we thought it could somehow be incorporated into the interactive gallery design. The CEO and Vice President mentioned two museums that have exceptional interactive galleries—ArtQuest at the Frist Center for the Visual Arts in Nashville, Tennessee, and Art Sparks at the Speed Art Museum in Louisville, Kentucky. I had already attended a conference at the Denver Art Museum, where I learned about their excellent programming for families that includes three types of interactive spaces. We decided that I could efficiently round out my research in March by visiting the Frist and Speed museums, which are only a 2 hour drive apart. In the meantime, I was instructed to prepare a research report (Appendix A) and timeline (Appendix B) for the project.

### **Research: January – March 2005**

My learning curve was steep. I had no previous experience in creating interactive learning environments, and I wanted to arrive at the Speed and Frist with enough knowledge to devise intelligent questions. Therefore, I contacted my colleagues through the museum education list-serve, [talk@museum-ed.org](mailto:talk@museum-ed.org), and used the internet to create a list of other museums with interactive galleries. I then contacted and interviewed several educators by e-mail and phone.

My research report, which I presented at a staff meeting in February, consisted of information from four museums: the Cummer Museum of Art & Gardens in Jacksonville, Florida; the Boise Art Museum; the Speed Art Museum; and Denver Art Museum. I was most interested in comparing and contrasting size, annual budgets,

staffing, educational and institutional goals, visitor capacity, years in operation, and benefits experienced. I also recorded any other information offered; therefore, the lists are not equal in length or content. From this information, I gleaned the educational, design, and attendance goals, listed in the research report, that we could consider for our planned space.

### **Planning Process: January – June 2005**

I began immediately to assemble the Interactive Gallery Task Force, chaired by a member of our board of directors and consisting of the museum's registrar, director of operations, and the curator of public programs. We asked several persons outside the museum to join the Task Force, including persons representing our diverse communities, young professional families, and early childhood education. We could not get a commitment from this "potential" museum audience, so we eventually appointed four very motivated museum volunteers to the Task Force: a museum docent, an artist, an elementary art teacher, and a history museum educator who was formerly on our board of directors. The Task Force worked primarily to identify broad goals and visitor needs; to present a consensus of opinion regarding recommendations for the type, size, and design of the proposed interactive gallery; and to match our needs and goals with the qualities and experience of a design firm that would be the best fit for our project.

### **Researching Design Firms: January – May 2005**

At first, the thought of researching design firms seemed daunting. I found, however, that I could carry out an inexpensive and informal process that made more

efficient use of our limited resources. First, I sent an e-mail to the museum-ed list-serve requesting the names of design firms my colleagues had worked with and would recommend. I received several recommendations, checked their websites, and requested their promotional materials via e-mail. Some replied by e-mail or phone and were very quick to send their material. Some didn't reply at all, so I removed them from my list.

After reviewing the materials received, I removed the firms that had the least experience working with art museums and created a summary of each of the remaining firms' most outstanding qualities. I presented this summary to the Task Force, and we narrowed the list down to three, noting that the Frist Center for the Visual Arts, the Cummer Museum of Art and Gardens, and the Speed Art Museum had each worked with one of the designers. I interviewed museum educators from the above museums and representatives from the three design firms, via phone and in person, to gather more in-depth information (Appendix C: Interactive Gallery/Design Firm Comparison Chart). I am not divulging the names of the design firms, as I do not want readers to misconstrue our preferences as advertisements for one firm over another.

### **Brainstorming: April 2005**

Our Task Force scheduled two, one-hour "brainstorm sessions," inviting museum staff and volunteers, members of the board of directors and education program advisory group, artists, and community members to attend. In all, 24 people took part in the sessions, which I facilitated by jotting down every idea expressed on a white board. In the first session, we brainstormed answers to the questions, "What do we want our visitors to *experience* in the Interactive Gallery?" and "What do we want our visitors to

*know* as a result of their visit(s) to our Interactive Gallery?” After the session, I organized the ideas into categories, which resulted in two documents titled, “Design Considerations” (Appendix D) and “Learning Station Concepts/Themes” (Appendix E). We spent our time in the second session creating a mission statement specific to the Interactive Gallery. The resulting document, titled “Plains Art Museum Interactive Gallery Mission, Design Considerations, and Concepts” (Appendix F), summarized the information gathered from both brainstorm sessions and was eventually used as a framework for creating our final FingerPrints Concept Design.

### **Serendipity and Choosing a Design Firm: June 2005**

Coincidentally, the J. Paul Getty Museum in Los Angeles, California, hosted an interactive gallery symposium, *From Content to Play: Family-Oriented Interactive Spaces in Art and History Museums*, on June 4-5, 2005, just as our Task Force wrapped up the initial planning process and was ready to choose a design firm. I attended the symposium, which reinforced much of what we had already learned and provided valuable new information that was extremely useful for our project and my thesis paper. A representative of one of the design firms we were considering presented at the symposium with a museum educator. I was impressed with their presentation, which focused upon the fact that educational considerations and audience needs should guide the design process. I spoke with the educator and the design firm’s representative at dinner about their collaborative work relationship. At our next Task Force meeting, I not only felt I had an abundance of information to share, I also felt confident recommending we hire the above-mentioned design firm.

The Task Force confirmed the recommendation and, with the help of our lawyer, we negotiated a contract for the following services:

Phase 1: Collaborative development of objectives and desired outcomes for each concept area: numbers, types, and contents of exhibits; and numbers of users of the exhibits.

Phase 2: Designer presentation and museum review of exhibits for modification and final design development.

Phase 3. Designer creation of concept design document for fundraising package.

The cost of these services included the concept design fee of \$25,000 plus \$3,000 in reimbursements for travel, telecommunications, reproductions, and deliveries.

The design firm's representative made an initial visit to our museum in September to gather information and meet our staff and board members, then returned in November to present the final concept design. Between September and November, our Task Force and staff were busy gathering logistical information, digital pictures of the space, and any other data the designers required to do their job. Drafts of the concept design document went back and forth between the design firm representative and me, as we worked out the details of the concept text and design visuals. The resulting concept design document consists of descriptions and graphics of the eight exhibit areas, including the entry and overall gallery and library areas. The document is in .pdf format, so we can print and spiral-bind it for use as a fundraising and public awareness tool. In addition, and at the request of our Task Force chair, I created a one page "FAQs About the Plains Art Museum's Proposed FingerPrints Interactive Gallery"

(Appendix H) that gives interested parties and potential funders pertinent information at a glance.

### **Naming the Space: September 2005**

Our Task Force was so busy working on our project that we failed to attend to the task of naming our “baby”—something we should have started in January. It would have been advantageous to have a name from the beginning to give our project an identity and personality. As it was, we felt pressured and rushed to come up with something original, logo-friendly, and brilliant in two weeks.

The full Task Force first met with the museum’s development and marketing department staff to discuss process procedures and possible names. Eventually, we found it easier to narrow the group to the three people who had the patience and wherewithal to stick with the task. We came up with many names and sent them off with volunteers to be voted upon by students, parents, and members of a local wine club. However, when we “Googled” the winning name, we found it was exceedingly unoriginal. In fact, nearly every name we conjured up could be found in abundance on the internet. Just when we were about to give up, a new staff person in development came up with “FingerPrints Interactive Gallery.” Besides some concern over possible associations with criminals and the FBI, we agreed we had a winner. FingerPrints suggests uniqueness, a process that is hands-on and playful, and the idea that the interactive learning experience invites visitors to “leave their mark.” Also, Google revealed that FingerPrints is a relatively rare program name in the art museum world.

## 20-20 Hindsight

Had I known then what I know now, I would have followed George Hein's advice (as cited on page 3 of this thesis) and begun the planning process by facilitating the development of a museum-wide education philosophy. Unfortunately, much of my thesis research took place after the actual planning process had begun, and we have yet to address this issue.

I would have also encouraged the museum to conduct a feasibility study of its capacity for implementing an interactive gallery space *before* the actual planning began. As it turned out, I put together a very unscientific guesstimate of FingerPrints' anticipated operating needs and suggested ideas for generating audiences (Appendix H) at the end of the project. I gathered most of my ideas and estimates using the *ArtQuest Peer Institution Survey Results*.

When I took on this task, it was in addition to my regular duties. Add to that a thesis paper, and I'll admit there were times when I thought I'd collapse under the weight of it all. I know the future fabrication, installation, and operation of the FingerPrints Interactive Gallery will require full-time attention to detail and quality. However, financial realities will no doubt determine how the space is staffed.

There is an upside. I am very happy with our design firm choice and the simple, informal research process we used. I've discovered the process of choosing a designer is partly logical, but mostly intuitive, because the working relationship is among people, not organizations, and a comfortable rapport is essential to a successful outcome.

I am also pleased with our brainstorming process. We had a great turnout, and I could barely keep up with recording the ideas that were bouncing around the room.

Since a small Task Force is more practical for the decision-making process, involving a larger group for the brainstorm sessions is a beneficial way to gather diverse ideas and build support for the project. We would have liked to invite children into this part of the planning, but we decided to use their expertise in the future when we prototype the exhibit activities.

Finally, I have had the pleasure of working with some amazingly talented, creative, and fun-loving co-workers and volunteers. Sometimes blind faith, unbridled enthusiasm, and a blessing from the administrative gods can trump inexperience. Our project has enjoyed all three components, which will continue to serve us well until we accomplish our capital campaign goals. When that happens, our planning group will probably be the first to come out and play in the FingerPrints Interactive Gallery.

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## Appendix A

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### **Research Report for Plains Art Museum Interactive Gallery**

*Resources: Cummer Museum of Art & Gardens,  
and Boise, Speed, and Denver Art Museums*

#### **Cummer Museum of Art & Gardens** (Jacksonville, Florida)

Source: Telephone interview - Chris Yates, Assistant Director of Community Programs.  
904.355.0630

#### ***Art Connections***

- 6,000 square feet + adjacent studios
- Accommodates up to 40 kids at a time, 30,000 kids a year
- Operated for about 10 years – got old. After 2 yr. planning was renovated and reopened in Feb. 2004
- Main goal of renovation: User friendly way to understand works of art in Cummer Perm Collections
- Renovation specific to permanent collection objects rather than generic art experiences in former incarnation
- Renovation designed for adults as well – resulted in increased adult attendance
- Renovation geared to school curricula – interdisciplinary, standards-based
- Renovation = less text, more visual
- Most popular activities: low-tech area for toddlers – books, games, wood puzzles, and big pillows on floor
- Renovation includes mini kid-sized gallery with reproductions of permanent collection 2D and 3D objects
- Saved from original – *Recollections*, movement triggered colors/patterns in a dark room – very popular and reliable technology.

## **Boise Art Museum**

Source: Telephone interview: Heather Farrell, Associate Curator, Heather Farrell

### ***Art Experience Gallery***

- 950 square feet (approx. 38'x25')
- Accommodates 10-20 people at a time
- Established in 1998
- Connected to 1450 square foot education wing (includes 3 studios) at back entrance by school bus parking
- Activities designed for investigating how art is made, who makes it, and the ways in which ideas, feelings, creative approaches and meanings are communicated through visual forms
- Uses BAM's permanent collection and exhibitions as starting point (although now mainly using traveling exhibitions, as permanent collection not displayed)
- Geared for families – not a babysitting space!!
- Annual cost – guess is \$2000, basically just materials
- Staffed by a security guard
- No increase seen in attendance.

## **The Speed Art Museum** (Louisville, Kentucky)

Source: Written information from Bryan Warren, Associate Curator of Education for Family and Youth

### **Laramie L. Leatherman Art Learning Center (ALC) and *Art Sparks* interactive gallery**

#### ***Art Sparks***

- 4,500 square feet
- Designed for ages 2 - 10
- 30 activities, multimedia, and works of art (12 thematic hands-on activity stations, studio workshops, and Electronic Art room, and Planet Preschool for ages 2-5)
- In the midst of renovations – to reopen in Fall 2005
- Staffed by part-time gallery assistants, docents (for school tours), and volunteers
- Annual ALC cost: \$100,000 (staff, maintenance, & programming)
- Funded by operational budget, foundation grants, and admission fees.

#### Goals:

- To provide children and families with an interactive introduction to art and the museum's collection
- To cultivate a habit of lifelong learning in museums
- To attract visitor interest and curiosity rather than communicating large amounts of factual information about art and artists.

#### Design Objectives

- To be a safe, secure, and comfortable space for multi-aged children and their parents
- To serve as a bridge between young visitors and the permanent collection
- To communicate an environment supportive of creativity and play
- To encourage exploration in a social context.

#### Signs of success:

- Increased levels of financial support from foundations
- Increased public and staff interest in extending interactive areas to galleries
- Increased level of new family memberships
- Pattern of repeat visitation and regulars to Art Sparks
- 50% of visiting school groups arrange for Art Sparks experience.

#### Signs of enriched learning (summative evaluation study by Institute for Learning Innovation):

##### Sample showed that visitors of all ages:

- Found the experience socially meaningful and memory making
- Made personal connections
- Saw the ALC as physically and emotionally safe
- 50% visited the museum's collection before or after their visit.

## **Denver Art Museum**

### ***Just for Fun Center, Discovery Libraries, and Art Stops***

Sources:

*Resources for Museum Professionals: Families & Art Museums* report funded by the Pew Charitable Trusts

Telephone and personal interview: Maria Garcia, Family Programs Coordinator,  
Visit to the facility with two children ages 5 and 9.

#### ***Just for Fun Center***

- Open weekends/holidays only
- Staffed by weekend family programs assistant who welcomes visitors, keeps eye on supplies, helps families, liaison to education staff
- Visitor Focus Group helped plan
- Wanted place where kids could touch everything, make noise, and run free
- Staff builds and tests prototypes before committing
- Connected by an underground tunnel to the Denver Public Library – librarians give out free DAM passes
- Activity stations portable – can be packed up and stored in 45 minutes
- Future plans: to make stations permanent
- Annual cost of maintenance: \$1500 – 2000.

#### ***Discovery Libraries (there are 2)***

- Permanently integrated into two traditional gallery areas - Western Discovery and Bernadette Berger Discovery Libraries
- Provide intimate exploration of art in personal context that appeals to all ages
- Comfy chairs, rugs, coffee tables, shelves, tables & drawers with books, art, reproductions, hands-on interpretive objects, cupboards with dress-up clothes, reading and video-viewing corner – all to scale for kids and adults (Patterson Williams, Dean of Education and master teacher for Asian art: “How can an art museum be more like a library in terms of its effectiveness in serving and enriching the lives of a broader spectrum of people...?”)
- No structure – curiosity guides the way to learning.

#### ***Art Stops***

- Hands-on learning stations scattered throughout the permanent collection galleries with eye-catching stop signs
- Twelve have been developed – half are out during weekends and holidays only
- Staffed by paid interpreters (mostly college students) – volunteers didn’t work
- Interpreters don’t present – they facilitate learning
- Each stop designed for more in-depth interpretation of an adjacent permanent collection artwork
- Designed for a multi-sensory experience.

## **SUGGESTED GOALS**

### **for Plains Art Museum Interactive Gallery**

*Create an environment that:*

*(design)*

- Is aesthetically well designed
- Has consistent, recognizable, and appropriate graphic image/logo/mascot
- Looks like and functions as a space for visitors of all ages
- Designed for self-directed use
- Provides activities for large physical play & small motor play
- Connects visitors primarily with works from PAM Permanent Collection
- Provides experiences for understanding of art elements & principles
- Provides a space and resources for research
- Is conducive to art-making and creativity
- Is functional, safe, and comfortable for visitors of all ages and abilities (including Braille and sound equipment?)
- Is easily maintained - sturdy/low maintenance objects/activities
- Has sufficient space and activities for 25 – 30 people at once.

*(education)*

- Is conducive to individualized and personal learning/meaning making (constructivist learning model, based in part on Mihaly Csikszentmihalyi's ideas about linking the emotional and intellectual aspects of an object through association memories, feelings, and imagination)
- Supports wonder, creativity, and play in learning as a discovery process
- Cultivates & encourages lifelong learning in the museum context
- Employs Howard Gardner's Theory of Multiple Intelligences for a balance of learning styles (viewing/reading, discussion, storytelling, object handling, artistic expression, & personal reflection, to name a few)
- Provides interdisciplinary connections to math, music/dance/theater, science, history, language arts, and social studies (e.g. the history of printmaking, the science of color).

*(attendance)*

- Increases overall visitor attendance
- Increases visitor gallery attendance
- Increases return visits.

## Appendix B

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### Interactive Gallery Timeline

Action	Deadline
Solicit task force members from staff/board	Dec. 2004
Gather list of designers and make contact	Dec. 2004
Initial meeting with museum board representative/Task Force chair	Jan. 2005
Solicit rest of task force members from community & facilitate 1 <sup>st</sup> meeting	Jan. 2005
Give list of designer information to task force members for consideration.	Feb. 2005
Travel to Speed & Frist museums	March 2005
2 <sup>nd</sup> Task Force meeting: Present Speed/Frist info to members. Narrow down design firms to three.	April 2005
1 <sup>st</sup> staff/community brainstorm session: define design considerations and learning concepts.	April 18, 2005
2 <sup>nd</sup> staff/community Brainstorm Session: construct mission statement.	April 25, 2005
Attend interactive gallery symposium @ Getty.	June 3-4, 2005
3 <sup>rd</sup> Task Force meeting – Present info from Getty/brainstorm sessions. Select design firm.	End of June 2005
Draft and sign contract with design firm.	July-Aug. 2005
Selected design firm presentation to task force, staff, and board.	Sept. 2005
Planning/design activities.	Sept.–Nov. 2005
Fundraising	On-going
Begin construction	Upon successful completion of fundraising efforts and signing of contract with designer and or fabricator. (Originally set to begin Jan. 2006)
Opening of Interactive Gallery	8-10 months after construction begins. (Originally scheduled for Fall 2006)

## Appendix C

### Interactive Gallery/Design Firm Comparison Chart

Frist ArtQuest 4000 sq. ft.	Speed Art Sparks 2500-3000(?) sq. ft.	Cummer Art Connections 4500 sq. ft.
<p>Goal (Big Idea): Understand the ways art influences everyday life.</p> <p><u>3 Concepts:</u></p> <ol style="list-style-type: none"> <li>1. Art Essentials (line, color, space)</li> <li>2. Art Materials &amp; Techniques (activities: paint, sculpture, prints, exhibition-related)</li> <li>3. Art &amp; Meaning (formal, personal, cultural/historical)</li> </ol> <p>31 learning stations</p>	<p>Goal: Create an experience that changes audience view of art museums. The visitor should</p> <ol style="list-style-type: none"> <li>1. Feel comfortable</li> <li>2. Have fun</li> <li>3. Learn something</li> </ol> <p><u>12 Thematic Areas:</u></p> <p>Portraits Architecture Dutch Paintings Native American Art Weaving Wall Symmetry/pattern Recollections Drawing still life Texture Art History Style Studio Native American Copper Tent Collections</p> <p>30 learning stations</p>	<p>Goal: To inform, entertain and challenge visitors to expand their understanding and appreciation of art.</p> <ol style="list-style-type: none"> <li>1. Understand “sparks” of creativity</li> <li>2. Understand artist’s expression of culture &amp; personal vision</li> <li>3. Give visitors richer museum experience</li> </ol> <p><u>Themes/Concepts:</u></p> <p>Young Visitors Area Art Processes Composition- Foreground/Background Color Human Figure &amp; Portraiture Art in Florida Myth &amp; Symbol Materials &amp; Texture Student Work Historical Perspectives The Cummer Legacy Design &amp; Composition</p> <p>30 learning stations</p>
Frist’s Design Firm	Speed’s Design Firm	Cummer’s Design Firm
<p><u>Warranty</u></p> <ol style="list-style-type: none"> <li>1. 1 year (standard) on workmanship &amp; manufacturing.</li> <li>2. provide a care maintenance manual, touch-up paint kit, instructions – how to clean/repair</li> <li>3. manuals from manufacturers of audio/computer equip.</li> <li>4. list of replaceable fixtures.</li> <li>5. will work w/local installers/suppliers – can get maintenance contract</li> </ol>	<p><u>Warranty</u></p> <ol style="list-style-type: none"> <li>1. 6 month, can be extended to 1 yr.</li> <li>2. Manual 300 pages w/CD of all graphics, final drawings, digital shots of how to assemble things/replace light bulbs, etc., lists of manufacturers, color/finish schedules, how to change a computer password.</li> <li>3. Other manufacturer info in manual.</li> <li>4. Provide extra manipulatives that tend to get lost.</li> </ol>	<p><u>Warranty</u></p> <ol style="list-style-type: none"> <li>1. 1 year (standard) (will fix if something breaks or doesn’t work like we planned)</li> <li>2. Provide maintenance/operating manual.</li> <li>3. Manufacturer info.</li> <li>4. Long-term partnership. Need an extra bulb? We’ll get it for you.</li> <li>5. Local contractors ok. They can provide architecture layout for local contractor.</li> </ol>

<p>w/locals and work w/local vendors.</p> <p><b><u>Design Process</u></b></p> <p>Us</p> <ul style="list-style-type: none"> <li>• come up w/conceptual design – idea matrix (content).</li> </ul> <p>Them</p> <ul style="list-style-type: none"> <li>• does shop drawings and fabrication of exhibit elements. They contract w/design teams/graphic designers.</li> <li>• Design concepts—floor plan, space planning/shapes, ergonomics, ADA requirements.</li> <li>• Present design ideas via fax, phone, e-mail.</li> </ul> <p>Us</p> <ul style="list-style-type: none"> <li>• Refine their proposed designs</li> </ul> <p>Them</p> <ul style="list-style-type: none"> <li>• Present “Final Design”</li> </ul> <p>Us</p> <ul style="list-style-type: none"> <li>• Sign off on final design</li> </ul> <p>Them</p> <ul style="list-style-type: none"> <li>• Tech Dept creates drawings</li> </ul> <p>Us</p> <ul style="list-style-type: none"> <li>• Review (can still make changes)</li> <li>• When ok sign off</li> </ul> <p>Them</p> <ul style="list-style-type: none"> <li>• Begins fabrication. We can follow construction on Web Cam &amp; thru weekly conference calls.</li> <li>• Can send someone to see in person. Only small tweaks possible at this stage.</li> </ul>	<p>5. Strongly advise to work w/local contractors to build technology-based exhibits. Will make maintenance easier—i.e. shipping. Will work w/local fabricators if the meet their “bomb-proof” standards of construction.</p> <p><b><u>Design Process</u></b></p> <p>Steps: (Firm says, the more WE do, the less it will cost)</p> <p>Us</p> <ul style="list-style-type: none"> <li>• Project Organization, Scheduling</li> <li>• Concept Design</li> </ul> <p>Them (in conjunction w/continuous feedback from us.</p> <ul style="list-style-type: none"> <li>• Exhibit Design/Program Planning. Exhibit Design Development (including testing prototypes)</li> <li>• Final graphic design &amp; drawings. Sign off.</li> <li>• Fabrication &amp; Installation</li> </ul> <p>Their city has big film industry so have many specialty fabricators. Have access to webcam capabilities—AIM instant messenger, which works w/ PCs and Macs. Trips to &amp; fro sometimes necessary for them &amp; us. Possible we take one trip to see the fabrication shop.</p>	<p><b><u>Design Process</u></b></p> <p>InterActive can do it all—including educational consultation.</p> <p><b>Plan:</b> Workshop - <b>\$5000 + travel.</b> They guide and advise, get stakeholders on same page, lead thru process of planning, set development schedule. Mission? How gallery perceived? Ends w/written program (working statement) consensus for mix of exhibits + visualization of how it will be implemented.</p> <p><b>Concept design and programming - \$15,000-30,000.</b></p> <p>Rough look/feel of space, how all fits together, vision of how it will look – color palate, renderings. Fundraising tool.</p> <p>Continuous communication via phone, e-mail and trips to Fargo (2-3 for presentations of design + executive briefing to board. No video conferencing yet.</p> <p><b>Design/fabricate \$250/sq. ft.</b> Nitty-gritty architectural design for fabricators. “Quick-time” walk throughs-computer pans</p> <p>Fabricate Ship Install Warranty/ongoing partnership</p> <p><b>Interior Improvements \$10-20/sq.ft.</b></p> <p>Lights, floor covering, electrical, walls, doors, etc.</p> <p>Trips can be factored into price, negotiated. Extra trips: travel expenses extra. Willing to interview for free.</p>
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## Appendix D

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### Design Considerations

(What do we want our visitors to *experience* in the Interactive Gallery?)

**Accessibility (for all ages & abilities)**

No frustrations – physically and intellectually

Comfort – physical, emotional, intellectual

Safety

Activities that are user-friendly

Activities that are age-appropriate (or that can be experienced on multiple levels)

Kinetic activities: Places to climb, be noisy—freedom to be a kid

Activities that accommodate multiple intelligences

Touchability

**Open-ended learning activities with no pre-determined results**

Inspiration

Creativity

Imagination

Fun

Positive

Exciting

Unique experience (different from regular galleries)

**Types of activities: Art viewing, art experiencing (multi-sensory), art making, reading, writing, research/study**

Quality art books

Regional art (Permanent Collection)

Designated space(s) for exhibiting visitors' art

Resources for deeper study of artists, artworks

Active engagement

Use all senses to learn

Technology to expand knowledge about art & Permanent Collection (Computer Kiosk)

Where to find additional resources

Alternative ways of learning

**Relevant, versatile, and progressive learning activities**

Educational

Something new every visit

Rotating subjects

Activities that build on a particular concept over multiple visits

Lasting learning

On-going learning

Ongoing relationship w/museum

Activities that address the National Standards

**Innovative and dynamic design**

Unique color scheme, not childish

Intriguing design with levels (as in “climbability”)

## Appendix E

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### Learning Station Concepts/Themes

Our visitors will learn...

The Museum is a community organization

What a museum is & does-collects, preserves, exhibits, educates

What a museum collection is

***Therefore understand that...the Museum plays a vital role in the community.***

Our visitors will learn...

Art exists everywhere – art is life

Function of design in everyday life

Art's relationship to other disciplines

That our region produces strong art

The different art genres (can rotate, depending on exhibitions)

***Therefore understand that...Art enriches our everyday lives.***

Our visitors will learn...

Art is a visual experience

Meaning can be personal - can come from personal experience

Art conveys other people's perspectives

Art can be therapeutic

Art is a reflection of culture & heritage

Art is a language, "written" & "read" through art elements, principles, composition, perspective, semiotics (signs and patterns of symbolism), etc.

***Therefore understand that...Art communicates meaning (cultural, social, political, spiritual, personal).***

Our visitors will learn...

Why artists create

What it means to make art

Intent of pieces from artist's perspective

Understanding of materials (the feel & sense of things)

How to connect ideas with process

How to think in innovative ways

How to problem solve

To be proud of their accomplishments - Attitude change

***Therefore understand that...Art is a complex process/Everybody is creative.***

## Appendix F

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### Plains Art Museum Interactive Gallery

#### **Mission, Design Considerations, and Concepts**

as determined by brain-storming sessions involving 24 community members and staff

#### **Mission:**

**The Museum's visitors will gain a personal understanding and lifelong appreciation of art through *hands-on, mindful, and heartfelt* exploration.**

#### **Design Considerations:**

- **Accessibility (for all ages & abilities)**
- **Open-ended learning activities with no pre-determined results**
- **Types of activities: Art viewing, art experiencing (multi-sensory), art making, reading, writing, research/study**
- **Relevant, versatile, and progressive learning activities**
- **Innovative and dynamic design**

#### **Learning Station Concepts/Themes:**

- **The Museum plays a vital role in the community.**
- **Art enriches our everyday lives (and vice versa).**
- **Art communicates meaning (cultural, social, political, spiritual, and personal).**
- **Art is a complex process/everybody is creative.**

## Appendix G

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### FAQs About the Plains Art Museum's Proposed **FingerPrints Interactive Gallery** A Hands-On, Mindful, and Heartfelt Learning Experience

The Plains Art Museum seeks to create an interactive learning space for visitors of all ages and abilities. This 1,600 square foot “interactive gallery” will be located in current office space, which is adjacent to the Donath, Jr., Memorial Gallery on the second floor.

#### ***What is an interactive gallery?***

An interactive gallery is a space where visitors can actively explore abstract ideas and concepts in a learning environment. These explorations are usually conducted at “learning stations”, which engage the visitor through visual, tactile, kinetic, and auditory means.

#### ***What is meant by Hands-On, Mindful, and Heartfelt Learning?***

Recent research has determined that learning is enhanced through direct hands-on activities that engage the mind, interests, and emotions of the learner. The hands-off, text-heavy learning environment in art museums, where “no touching” and label interpretation are the rule, makes the museum experience intimidating for many people, young and old. To counteract this, interactive learning spaces—successfully employed by science and children’s museums for decades—have recently blossomed in art museums throughout the United States and beyond.

#### ***What are the benefits of incorporating interactive galleries in museums?***

Museums that have developed interactive galleries report:

- increased engagement in the museum experience
- increased retention of ideas/concepts learned
- stronger connection and commitment to the museum

Museum administrators report:

- increased level of new family memberships
- increased pattern of repeat visitation
- increased participation of school groups
- increased overall visitor attendance
- increased levels of financial support from foundations
- deeper involvement of public in museum programming

#### ***What is the process for developing an interactive gallery?***

The Plains Art Museum’s Interactive Gallery Task Force, consisting of staff, board, and community members, is taking the lead on planning and implementation of the gallery. The Toronto firm, Design in 3 Dimensions, was hired in September, 2005, to create a concept design. The concept design is complete and will be used in fundraising. Exhibit development stages are as follows:

1. Research
2. Define overall goals, objectives, and intent of gallery—get consensus
3. Hire interactive exhibition design firm to design space/activity stations
4. Create concept design (content)
5. Fundraise
6. Fabrication and installation

#### ***What is the estimated cost?***

The design, fabrication, and installation of the interactive gallery is estimated to cost \$500,000.

## Appendix H

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### ***FingerPrints* Operating Needs/Possibilities**

Using the ArtQuest Peer Institution Survey Results of 13 museums with interactive galleries, the following is what we *might* anticipate for our proposed interactive gallery:

#### **Staffing**

##### **One full-time staff person to**

- Curate Youth Art Wall, “Community Collections,” and “Design or Art?” (tentative name) showcase of art juxtaposed with a design object
- Design gallery activities and research new approaches to interdisciplinary educational interpretation – need to keep it FRESH!
- Design/oversee evaluation—very important for us and for the Museum Education community—something all educators agree we need to focus on
- Oversee staffing
- Oversee cleaning and maintenance
- Monitor/facilitate space as needed.

**One part-time staff person (art education student?)** to monitor/facilitate space during weekend/evening hours, assist with curriculum development, assist with evaluation, facilitate special rentals such as corporate or birthday party events.

**Several volunteers/interns** to augment the duties and staff hours needed for the smooth operation of the gallery. Volunteer docents will be especially helpful for school tours during the day and to help out on busy weekends and holidays. Interns can help with some of the staff’s responsibilities, as well as take on special programs or curriculum-development projects.

**Cleaning maintenance staff person.** Cleaning the fingerprints in FingerPrints will be a HUGE job—not just for cleanliness, but also to keep everything as germ-free as possible. Part-time visitor services staff could be recruited to do the job.

#### **Users**

30% school groups:  
60% families  
10% other

#### **Annual budget**

\$10,000 – 15,000 (not including staff salaries)

#### **What generates most visitors**

Making art  
School tours  
Special programs/events  
Free days  
Collaborative programming

#### **Successful promotional strategies**

Word of mouth  
Free days  
Visitors services staff  
Special programs  
Museum and/or collaborative press releases (e.g. with local library)