Integrating Scaffolding Experiences for the Youngest Visitors in Museums

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Abstract

Research demonstrates that children have vast potential to expand their knowledge base with simple supports from adults and older children. Children's museums have a heightened awareness of the value in and the need to reach out to support adults accompanying children, thus bringing about an emphasis on family learning. Iterative exhibition studies conducted at The Children's Museum of Indianapolis illustrate the impact of planning for family learning. But for any museum, intentionally applying the strategy of scaffolding by building on simple concepts and working toward mastery of ideas, can inform adults and simultaneously help children stretch to new levels of understanding and achievement. This strategy requires curators, educators and exhibit developers to work collaboratively to determine various levels of accessibility of content and activity moving from entry level ideas through more complex and abstract ones for older children and adults.

Early Learning in Children's Museums

Children visiting museums of all types is certainly nothing new, but their experience in those spaces has changed over time. From the earliest iterations of children's museums, to contemporary practices in museums of all types, the attention museum professionals place on the needs of this special audience is changing. The idea of hands-on learning, facilitated and mediated learning experiences, and scaled-down environments have

become more prominent (and often expected) in museum settings where young children visit with their families. The increased visitation of family groups, especially those with young children, requires greater attention by museum educators, exhibition developers, and designers to support the learning needs of this audience. Most children's museums place special emphasis on designing environments that support learning for very young children. Lessons learned from the work done in children's museums can provide models for those in other museum settings to meet the needs of early learners.

Children's museums acknowledge that providing for early learners, ranging from babies as young as three months to five year-old preschoolers, is an essential aspect of their mission. Typically, museum exhibitions apply constructivist learning approaches wherein children generate knowledge by connecting experiences in exhibitions and specialized environments to their own ideas. While limited, the research in children's museums that has emerged from these experiences tends to center on the following two foci, often concurrently: defining what early learning looks like in children's museums and exploring the role of adults in these early learning experiences.

Several studies conducted at the Please Touch Museum in Philadelphia and Harvard's Project Zero in Cambridge investigated not only *if* young children learn at children's museum exhibitions, but also *what* they learn. In addition, these collected studies examined the role of adult guidance in children's learning[1]. Researchers used observed children as they interacted with exhibit components and subsequently coded their behaviors to find patterns. Based on the types of behaviors displayed, researchers categorized behaviors into discrete types of learning such as factual, procedural, or cause

and effect. Findings suggest that children are indeed learning in exhibitions and environments at children's museums and that learning is comprised of far more than the acquisition of facts and disciplinary content knowledge, and extends into developmental areas such as procedural and cause and effect learning. Moreover, positive effects on children's learning cycles clearly emerged as an outcome of active adult guidance.

Family Learning in Children's Museums

A movement away from child-centered experiences and toward family-centered experiences has slowly permeated the collective attention of leaders in children's museums. Administrators, planners, and developers have addressed the obvious: the majority of very young children cannot come to museums without adult accompaniment. In using child-centered approaches museum professionals realized that they were overlooking the adults as critical members of the learning cohort and that incorporating them into learning events offered the potential to expand the experience beyond the museum. Given this actuality, children's museums have heightened awareness of the value in and the need to reach out to support adults accompanying children, thus bringing about an emphasis on family learning. In these museums, planning to bring about family learning outcomes is intentional; goals and objectives for family learning outcomes are integrated into the development process from beginning to end. Although nascent, the body of research related to family learning is the most robust area of study related to early learning in children's museums.

One noteworthy study confirmed the essential role parents and caregivers play in guiding and supporting children's learning experiences in children's museums[2].

Researchers in that study found that children who received open-ended questioning ("vague guidance") from their parent/care-giver resulted in increased learning compared to children who received no guidance or prescriptive guidance (e.g., adult told answers or correct solutions) at exhibit components.

Despite the evident positive correlation between children's learning and parental involvement, several studies found that there is an apparent misalignment between parents' and children's museum professionals' expectations and beliefs about how young children learn and adults' roles in guiding that learning.[3] For instance, one study found that in an exhibition designed to promote parent-child pretend play interactions, parents' seeming discomfort with and lack of buy-in to the importance of pretend-play limited their involvement instead prompting them to assume a more didactic teaching role rather than engage in imaginative play. Other studies identified various cultural differences and preferences, as well as obstacles to parent involvement in children's museums, including a lack of understanding of the importance of play in young children's learning, a preference to simply watch their children play or a hesitance to play in public.[4] The sum of these studies' findings suggest that parents' beliefs about young children's learning and their role in that learning is often divergent from those espoused by museum professionals, and/or parents simply do not know how best to support or guide their young child's learning. Because parental involvement and guidance appear to increase young children's learning, further inquiry by children's museum professionals is necessary to bridge the gap between parents' intrinsic attitudes and beliefs about learning and how to design experiences to elicit family learning and engagement.[5] This must come

along with the acknowledgement that families choose to visit the museum for a variety of reasons. Paying attention to these motivations is useful in designing experiences that meet a wide range of interests and expectations.

Research at The Children's Museum of Indianapolis

Over the past ten years, The Children's Museum of Indianapolis has developed and refined its family learning initiatives and strategies.[6] This work included an institution-wide demonstrable shift away from child-centered experiences, to those where families (defined as at least one adult and one child with an on-going relationship) collaborate on problems, enhance the experience through personal connection, and build on each other's participation. Various strategies used by museum staff in numerous departments involved in exhibition and program development have been built over time. In recent years they have become the basis for multiple studies on the effects and implications of family learning at the museum.

  Research strategies include the triangulation of data collected from observations of families in situ, data from timing and tracking of these same family units, post-visit interviews and post-visit online surveys, the latter gathered after a one year interval. Unique to these studies is a design that required trained observers to follow the same family from the beginning to the end of their entire experience in an exhibition. The most recent studies have been conducted in galleries that were explicitly designed according to family learning principles. Research and evaluation studies conducted across exhibitions since 2007 have yielded several replicated findings; the generalizability of these findings

holds promise for other museums that intentionally integrate family learning cues for adults.[7]

A shared understanding among staff is that the amount of time a family has apportioned for their visit is a primary driver of their experience. A corollary assumption and ultimately a hypothesis to the iterative research conducted is that the greater the amount of time a family spends in an intentionally designed space provides greater *opportunity* for learning to occur. While this assumption has certain intuitive appeal, recent findings on interactive learning behaviors between parent and child have affirmed this convincingly. Comparing visit duration in the initial family learning exhibition, *Dinosphere: Now You are in Their World* to the most recent, *Take Me There: Egypt*, indicates that visit duration is increasing. Immersive environments are particularly effective in contributing to lengthened visits and stimulation of learning interactions between adults and children.

Increase in the length of an exhibition visit is even greater when comparing a family learning based exhibition with pre-2007 exhibitions that did not employ this strategy. Regardless of exhibition content, the distribution of families studied consistently clustered into three identifiable groups based on length of visit. These groups represent particular, observable behaviors of the family that revealed differences in the type and number of learning interactions associated with each group. In three of the four family learning based exhibitions those who remained the longest comprised more than 54% of the families in the study sample. When looking at individual components of exhibitions and holding power varies, but more importantly, popularity of an exhibit component is

not a perfect correlation with time spent at a component. Moreover, the correlation between the absolute number of components in an exhibition area and stay time is weak: more exhibit components are not predictive of longer stay times.

Using an inventory of 54 learning behavior interactions indicative of Participatory, Problem Solving/Collaborative or Enhancement interactions, the narratives of the observations were coded. Those families with long stay times had the highest average number of interactions. They distributed their interactions almost equally between Participation and Enhancement and engaged in Problem Solving/Collaboration more so than did those families that visited for shorter periods.

The question of whether or not visitors read labels has long been discussed in the museum field. For the *Take Me There: Egypt* exhibition, curators, exhibition/ content developers and designers purposefully integrated the family learning strategy of scaffolding in the texts and into the associated exhibit components. In the subsequent study of the exhibition, when families were anonymously surveyed on whether or not they found the family learning exhibit labels helpful to their understanding and their overall exhibition experience, the overwhelming majority (97%) agreed that the labels were at least "*Helpful*" with a large proportion (57%) indicating that they were "*Very helpful*" Respondents had the option to reply that the labels were "*Not helpful at all*" (1%) or, "*I didn't read them*" (2%). These results suggest that because the majority of families were reading the labels, doing so is likely to have contributed to increased stay time to some extent.

Scaffolding in Children's Museums' Exhibitions

At its most basic, scaffolding (for any learner) requires simplification of ideas or tasks and encouraging the learner toward successful experiences with that idea or task.[8] Scaffolded experiences are temporary. The adult role in scaffolding children's learning experiences occurs when the adult or parent recognizes that some additional form of support, guidance, or resources is needed to help the child move toward understanding, independent learning or mastery of that task or concept.

Parent involvement and interactions with their children in support of learning can occur across multiple settings and a wide range of experiences. In various settings, particularly those that have not been intentionally designed for young children, parents and other adults may naturally scaffold the learning and interactions of children. For example, consider a simple visit to a grocery store with a young child. The child has been to the store many times with an adult. The child knows the basic patterns of a shopping trip: select items, put them in the cart, pay the cashier and put the items in a bag. On this particular visit, the child wants to help. Her father might allow her to pay the cashier. The child knows that she must do something with the money. Father may hand his daughter the money and continue to guide her through the process: "Hand the money to the cashier. Okay, now get your change." Even the adult cashier can scaffold the experience. She might say, "That will be five dollars and ten cents, please!" This type of adult involvement allows the child a level of autonomy while at the same time helping her to learn the process. Soon enough, she'll be able to do this on her own. For the most part, the scaffolding experiences that adults provide stem from common collective knowledge of situations and scenarios that contribute to children's overall learning.

In children's museum settings, parents are inherently predisposed to a focus on children. The decision to visit a children's museum probably came from an adult expectation or hope to provide a meaningful learning experience for their children, or simply for a family outing.[9] The adults can enter, fairly assured, that the experiences and learning opportunities at a children's museum will be geared toward their child specifically. Yet even in these specially designed environments, parents may still need to provide scaffolding that is unique to their own children's stage of development, their interests, or their abilities. Parent interactions with children in these settings may reflect various needs of their children ranging from scaffolding of more abstract concepts by providing more information, such as how far away Egypt might be, or to support developmental experiences, such as encouraging the child in a sorting or classification activity.

An example of exhibit-based scaffolding demonstrates how an activity designed for toddlers can support messages for a gallery targeted for much older youth. *The Power of Children: Making a Difference* exhibition at The Children's Museum of Indianapolis, tells the story of prejudice and intolerance through the stories of Anne Frank, Ruby Bridges and Ryan White. One of the central messages of the exhibition is that children have the power to fight intolerance through their words, actions, and their voice. For very young children these messages are difficult to deliver -- even for a parent. The "Kindness Tree" is a simple activity for parents and young children to work on together. The tree, with a metal trunk and just a few branches, has multiple magnetic "leaves" that can be placed in any configuration. On each leaf are words with illustrated acts of kindness.

These include simple ideas such as, "Let others go first" and "Sit with someone new."

The child can easily add leaves to the tree or rearrange them. The parent scaffolds the

experience by reading the messages and relating those experiences to the child as he or

she completes the activity.

Implications and Call to Action

Planning and development of environments that support learning for all ages in *any* type

of museum requires careful consideration of both the probable content knowledge and

abilities of the children and adults in the visiting audience. Already, many history and art

museums and science centers have developed valuable and focused strategies to support

the needs of family visitors and specifically younger children (see for example the cases

presented in the Family Learning Forum, a project with the USS Constitution Museum,

and McRainey & Russick's *Connecting Kids to History with Museum Exhibitions).* There

is great interest in the museum field for more intentional efforts to continue this effort

and build meaningful and appropriate spaces for families with young children. This

forethought requires curators, educators, exhibition and program developers as well as

designers to work collaboratively to home in on key features of content or activity that

can interest and stimulate various levels of interaction by visitors. These might represent

small-scale efforts such as family guides or larger-scale endeavors like a family-friendly

exhibition space.

   Given that parents might naturally scaffold some part of the learning experience for

their child, exhibition planners and designers can build on these tendencies to promote

further and better learning for even the youngest audiences. Rather than adding on a

separate area for the littlest visitors (although this does have its place in certain experiences), the *content* of an exhibition can be scrutinized for potential opportunities for scaffolding. On a broader level, institutions might consider developing an overall plan across exhibitions to meet family learning goals and objectives: essentially, what would we like to have happen and where. This strategy requires curators and exhibition developers to determine various levels of accessibility of content moving from entry level ideas through more complex and abstract ones for older children and adults. Such ideas can be developed in multiple ways using learning frameworks that provide age-specific details on cognitive abilities, characteristics of age groups, and capacity of children in different content areas by age.[10] By applying these developmental frameworks appropriate scaffolding can support even the youngest children in an exhibition that might not be specifically targeted for their age group. Unique formats can also be offered. The Art Institute in Chicago caters to parents of very young children (18 months or younger) by offering guided stroller tours. During the stroller tours on such topics as Impressionism or Modern Art parents receive tips and strategies for how to provide and scaffold art experiences for their children; the tour ends in a "family room" where participants can engage in art-centered activities that are developmentally appropriate for young learners. Regardless of the approach taken, it is vital to observe and collect data on whether the approach achieves the intended outcomes. The scaffolding provided should be an engaging, diverse, and balanced approach to stimulate interactions, rather than didactic instructions that parents may perceive as arduous.

Other intentional planning of learning experiences (e.g., age appropriate curator carts,

live actor interpretations, accessible educators or simple applications of mobile cellular technology) especially those for young children not only supports their learning, but also provides clues, contexts and even nudges for adults to provide scaffolding. Family members (whether parents or older siblings) will then move more comfortably to support younger children in successful navigation of museum experiences, especially when in environments that are not designed with children in mind.

In contrast to children's museums, those museums where the content and context are focused on older audiences, the need for scaffolding is considerable since as Marilyn Burns posited: children are not "short adults".[11] The most fruitful strategies for these museums to take are to understand the range of content potential, as well as the cognitive and physical capabilities of the youngest visitors. Scaffolding does not need to entail a full-scale reinvention of every gallery space. Instead, many museums can elect to highlight particular aspects of the collection that may have more appeal to younger visitors, or that lend themselves to differentiation by levels of complexity. Research demonstrates that children have vast potential to expand their knowledge base with simple supports from adults and older children. By building on simple concepts, and working toward mastery of ideas, scaffolding in any museum can inform adults and simultaneously help children stretch to new levels of understanding and achievement.

Notes

1. Nancy T. Haas "Project explore: How children are really learning in children's museums." *The Visitor Studies Association* 9, no. 1 (1997): 63–69; Laurel Puchner, Robyn Rapoport and Suzanne Gaskins. "Learning in children's museums: Is it really happening?" *Curator: The Museum Journal* 44, no. 3 (2001): 237–259; Robert Russell L. "Project explore: please touch museum and Harvard university's project zero." *Informal Learning* 37 (Summer 1999): 1, 4–5.

2. Nancy T. Haas "Project explore: How children are really learning in children's museums." *The Visitor Studies Association* 9, no. 1 (1997): 63–69.

3. Stephanie Downey, Amanda Krantz and Emily Skidmore. "The parental role in children's museums." *Museums and Social Issues* 5, no. 1 (2010): 15–34; Suzanne Gaskins. "The Cultural Meaning of Play and Learning in Children's Museums." *Hand to Hand* 22, no. 4 (Winter 2008): 1–2, 8–11; Stephanie Shine and Teresa Y. Acosta. "Parent-child social play in a children's museum." *Family Relations* 49, no. 1 (January 2000): 45–52; Mallary I. Swartz and Kevin Crowley. "Parent beliefs about teaching and learning in a children's museum." *Visitor Studies Today* 7, no. 2 (Summer 2004): 1, 5–16.

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5. Elizabeth Wood and Barbara Wolf. "Between the lines of engagement in museums." *Journal of Museum Education* 33, no. 2 (2008): 121–130.

6. Elizabeth Wood and Barbara Wolf. "When parents stand back is family learning still possible?" *Museums and Social Issues 5*, no. 1 (2010): 35–50.

7. Barbara Wolf. "The nature of research and evaluation in children's museums: Some recommendations for determining generalizability." *Hand to Hand* 3, no. 1 (1989): 1, 9.

8. David Wood, Jerome Bruner, and Gail Ross. "The role of tutoring in problem solving." *Journal of Child Psychiatry and Psychology* 17, no. 2 (1976): 89–100.

9. Susie Wilkening and James Chung. "The Challenge of Moms." In. *Life Stages of the Museum Visitor* (Washington, DC: AAM Press, 2009).

10. Elizabeth Reich Rawson. "It's about them: Using developmental frameworks to create exhibitions for children (and their grown-ups)." In. *Connecting kids to history with museum exhibitions,* ed. D. L. McRainey and J. Russick (Walnut Creek, CA: Left Coast Press, 2010).

11. Marilyn Burns. *I am not a short adult: Getting good at being a kid* (Covelo, CA: Yolla Bolly Press, 1997).

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