

# Designing Exhibitions to Support Families' Cultural Understandings

by Suzanne Gaskins

Museums have increasingly come to recognize that most visitors are not interacting with exhibitions as individuals, but rather in social groups, and thus, to understand visitors' experience, group dynamics must be considered. This shift from individual to social is perhaps most significant for understanding children's experiences in informal learning environments, where the focus has become "family learning" (e.g., Borun, Chambers, Dristas, and Johnson, 1997). Borrowing from sociocultural theory in psychology, this approach to understanding visitors' experience argues that learning happens *between* people during their interaction, particularly through conversations (e.g., Crowley and Callanan, 1998; Leinhart and Knutson, 2004). Thus, it is becoming increasingly accepted that exhibitions should be designed to support and encourage family interaction. There are two implications of this approach that have received less attention by museum professionals and researchers so far. This article<sup>1</sup> will discuss 1) how caregivers' understanding of the exhibition influences their engagement and their use of resources offered by the museum to support their engagement; and 2) cultural differences in caregivers'<sup>2</sup> understandings of how experiences like those in a "hands-on" museum are related to learning and what their role should be, and how they are reflected in visitors' behavior. Implications for exhibition design will be given for each.

## Caregivers' Understandings and Joint Engagement in Exhibitions

A sociocultural perspective suggests that caregivers in museums play an important role in children's learning by "tutoring" indirectly through a process called *scaffolding* (Wood, Bruner, and Ross, 1976), which includes

such behaviors as recruitment, simplification, attention maintenance, highlighting characteristics of the task or the goal, and maintaining motivation and minimizing frustration. These behaviors are used to provide support for children's learning through hints and nudges by providing some information or focusing the child's attention through open-ended questions, while still allowing the children to retain some decision making in the process. It can be contrasted with *direct instruction*, where adults tell children explicitly what to do. But Vygotsky (1978), whose theory is the basis for the sociocultural theory of learning through social interaction, also argues that adults will vary the amount and type of mediation depending on their judgment about the match between the child's ability and the task. The job of caregivers in museum exhibitions, if they accept their role as "scaffolder," is to quickly compare two points of view and then act based on that comparison: 1) what their child is interested in and can do, and 2) what potential an exhibition has for activities and for learning. This comparison is done quickly as a family enters an exhibition, and caregivers will then make judgments about the level of *match* between their children's capacity and interests and the possibilities in the exhibition. If the exhibition is judged to be *beyond* the ability of the child, then caregivers will decide to engage to insure the most productive experience for their children. Even if caregivers have a model of learning through direct instruction, they will still engage as tutors in the exhibition only if they feel it holds more potential than their children can understand on their own.

For a given age child, then, museums can actually manipulate the amount of caregiver

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interaction in an exhibition. If the exhibition appears simple and straightforward, caregivers will tend to let children act on their own. If the exhibition looks somewhat more complicated, then they will tend to interact with their children to bridge the gap between what the children can do on their own and the exhibition's activities. The ideal complexity of the exhibition depends on whether the museum is primarily trying to support independent child exploration or collaborative family learning—for a particular age. It is virtually impossible for an exhibition to be successful at promoting either independent exploration or collaborative learning for a wide age range of children. Any given activity will be judged as “just their level” for children of one age to enjoy and learn from independently, “boring” for those older, “needs help” for those younger, and “way too hard” for those younger still. Providing “at their level” and “needs help” activities for a wide range of ages in a given exhibition or area increases the likelihood that families with different ages of children will find each location offers them something interesting to do. It also accommodates those caregivers who prefer to be informal teachers and those who prefer to be observers of their children's activities.

Caregivers who judge that their children need some guidance and support to get the most out of a particular exhibition can provide that support only if two conditions are met. First, the exhibition space must be able to support multiple participants and comfortably accommodate participants of various ages. Second, the caregivers themselves must have an adequate understanding of the activity to allow them to guide their children. To do this, they must understand the process and the outcome *early on in the activity and as it unfolds*. If they

don't, they cannot “tutor” effectively, either through scaffolding or direct instruction, and they will be less comfortable engaging.

From this analysis, it can be seen that caregivers' engagement with their children in family collaborative learning is a delicate and complex behavior for museums to support. Since interaction in general and scaffolding in particular have been shown to support learning (Puchner, Rapaport, and Gaskins, 2001; Friedlieb and Gaskins, 2007), it is important that museums accept the challenge. Exhibitions need to be designed intentionally for a wide range of ages, the potential for what can be done needs to be relatively clear to the caregiver upon entry or soon thereafter, and the caregiver needs to have the tools at hand to easily handle issues of process or content as they arise.

To illustrate caregiver *matchmaking* in a museum setting and to explore the extent to which convenient seating can increase caregiver engagement, my students and I measured different aspects of family interaction at the Chicago Children's Museum in their *Dinosaur Expedition* exhibition (Gaskins, Barbosa, and Oberik, 2007). The dominant activity in the exhibit occurs in a large pit with rubber shreds covering up a dinosaur skeleton. Like amateur paleontologists, children uncover the “fossils” by brushing and digging away the fragments of material that hide the skeleton. Through live observations, we compared the behavior of families with younger children (between 3-5 years of age) and older children (between 5-8 years of age).

First, because we thought that the activity would appear to caregivers to be fairly simple, somewhat like a sandbox, (even though in

reality there is more complexity in the exhibit), we predicted that caregivers of younger children would be more likely to interact with their children than caregivers of older children. We found that although families with younger and older children stayed the same amount of time in the exhibit (on average, about 7 minutes), there was a difference in the amount of joint attention (caregiver and child focused on the same activity). For younger children, joint attention was observed 39% of the time, while for older children it was observed only 14% of the time. This finding suggests that caregivers' level of interaction is indeed a result of their intuitive matchmaking between their children's abilities and the demands and possibilities of the exhibit activity.

Second, we felt from our informal observations that because there was no place to sit in the "pit" except on the ground, it was difficult for some caregivers to participate. Seating was present outside of the pit, but this encouraged observation rather than active collaborative engagement. For our study, we provided seating that was easy to move, in the form of lightweight camp stools, so that those caregivers who wanted to interact had a way to sit more comfortably within the "pit" wherever their children were digging. We predicted that this seating would increase caregiver-child interaction for both younger and older children. We found, however, that providing the seating affected only the behavior of caregivers of younger children. When caregivers of younger children had proximal seating available to them, they were more likely to propose what they should do (63% of the families) than without (38% of the families). And both children and caregivers talked more to each other. Children's talk increased from 58% of



Caregivers who judge that the activity in an exhibit is within their children's abilities will be less likely to participate. Here, in **Dino Expedition** at the Chicago Children's Museum, children dig to uncover a dinosaur fossil while caregivers sit outside the pit. Courtesy of the Chicago Children's Museum.

the time to 85% of the time. Caregivers' talk increased from 60% of the time to 78% of the time. None of these differences were found for families with older children when proximal seating was present.

The level of motivation of the caregiver to interact appears resilient in the face of physical changes to the exhibit aimed at increasing interaction. For those caregivers who thought their children needed their help, providing proximal seating increased their already significant interaction. For those caregivers who thought their children could do the activity on their own, providing proximal seating did not encourage them to engage more. This research underscores the importance of recognizing the importance of caregivers as *matchmakers* between their children and the exhibit if other features designed to support family interaction—like appropriate seating—are to have an impact.

### **Cultural Differences in Folk Theories about Play and Learning**

Just as caregivers bring with them to the museum a "theory" about their children's abilities and interests, they also bring with them their own common sense theories about how children learn in everyday activities (including informal learning environments) and their role as facilitators of that learning. Anthropologists call such intuitive theories about the world *folk*

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In **WaterWays** at the Chicago Children's Museum, a mother actively helps her two young children build a fountain. Courtesy of the Chicago Children's Museum.

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*theories.* It is often assumed that all caregivers have the same folk theories about how children learn, but research by anthropologists and others around the world suggests that this is not the case. Although it is often unstated, there is a theory of learning that informs the design of many museum exhibits: children learn best through open-ended, playful exploration, supported by adult participation, especially “scaffolding” as defined in the previous section. Underlying this theory are two basic claims: 1) play = learning; and 2) adults are appropriate playmates. This theory echoes the dominant folk theory of play of middle-class European-Americans (Haight and Miller, 1992).

My own research among the Yucatec Maya of Mexico (Gaskins, 1996; 1999) and that of many others looking at other cultures and sub-cultures within the United States (e.g., Parmer, Harkness, and Super, 2004) indicate that this theory is not universal. In fact, it may be unique to European cultural heritage. In

many cultures, play is thought of as a diversion or as a residual activity when there is nothing better for children to do. This is often the case when children are working, helping with chores, childcare, and food production. In these cultures, children learn more through participation in real activities and in observing others than in play (Gaskins, Haight, and Lancy, 2007). Likewise, adults are not seen as appropriate playmates in many parts of the world. Play is the domain of children and is only minimally supervised, since the older children take care of the younger while playing (Lancy, 2007).

Most of the ethnographic evidence of differences in folk theories about learning and play in children come from cultures outside of the United States. For museums in the United States, a more relevant question is: what is the folk theory of children's learning for the cultural groups within the country who are potential visitors to museums. As part of an ongoing study comparing European-American, African-American, and Hispanic-American families at the Chicago Children's Museum, my students and I are conducting interviews with parents who have children between the ages of 2 and 12 (outside of the museum setting) about their ideas on learning and play. Preliminary analyses of the data (Gaskins, 2007) have been focused on the two primary claims identified to be at the core of middle-class, European-American folk theory: 1) do these parents think that play = learning? and 2) do they identify themselves as appropriate playmates? The results summarized here are preliminary, because additional interviews are still being done. Even though the numbers of mothers interviewed so far are small (16 European-Americans, 10 African-American,

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and 19 Hispanic-American), the results are informative.<sup>3</sup>

The first question we analyzed was whether the mothers talked about learning, exploration, or curiosity when they explained why children play. While 81.3% of the European-American mothers attributed at least one of these three ideas to play, only 60.0% of the African-American mothers did, and only 44.8% of the Hispanic-American mothers did. The connection between play and learning is clearly strongest for European-American mothers. This is a significant finding for museums to the extent that they are designing exhibitions that intentionally use playful engagement to support learning, exploration, and curiosity. Our interviews suggest that caregivers will be much more likely to recognize the connection if they are European-American.

In another part of the interview, we told seven short stories about children at play that ended at the moment that the child in the story made a social overture to his caregiver. Then we asked the respondents to indicate what they would do next and counted the percent of their responses to the stories where the respondent reported that she would become a playmate. European-American mothers said they would join in the play for 78.6% of the stories, African-American mothers said they would join in the play for only 27.1% of the stories, and Hispanic-American mothers said they would join in 48.9% of the stories. These data illustrate that caregivers are coming to the museum with very different expectations about participation in playful, open-ended activities. The reluctance to join in children's play activities is undoubtedly only increased in a novel and public setting, like a museum.

Finally, we looked at whom the children had most often as play partners. Each group had a unique social world. European-Americans reported that their children played most with friends, then with adults, and then alone, and least with siblings. African-Americans reported that their children played most often alone, then with siblings, and only rarely with friends or adults. Hispanic-Americans reported most often that their children played most with siblings, then with adults, and only rarely alone or with friends.

Taken together, the results of these interviews suggest very different profiles of visitor expectations from these three cultural groups. European-American caretakers arrive at the museum expecting that their children will learn through playful activities and eager to join in. For them, trying to integrate siblings into joint activity is an unusual event. They most closely match the museums' expectations of how visitors will use the exhibits. African-Americans are somewhat predisposed to see learning in their children's play, but they are not as interested in being a participant in those activities. They come expecting that the children will explore the museum alone or with their siblings and that as adults, they will be more of a bystander than a participant. And Hispanic-Americans are not likely to see their visit as a learning experience but more of a social one, where siblings and caregivers will join in as participants to have fun and enjoy themselves.<sup>4</sup>

### **Cultural Differences in Museum Behavior**

These profiles suggest that not all caregivers are going to assume the role of matchmaker between the child's abilities and the exhibit, as described above in the first section. This role

## Cultures vary on their assumptions about what the purpose of coming to a museum is and what role adults will take during their visit.

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assumes that the adult recognizes the activity's potential for learning something and is willing to join in as a collaborator in the activity to structure the child's experience with an eye toward maximizing learning. In fact, the interview data with the three cultural groups suggests that perhaps only the European-American caregivers are going to consistently assume that role. To see if these cultural folk theories are visible in families who visit the Chicago Children's Museum, we have collected a great deal of information about entire visits of 15 families from each of the three cultural groups. Much of the data is yet to be analyzed, but there are some interesting findings that have already emerged (Gaskins, 2007). The data reported here are on just 12 European-American families and 12 African-American families.

Families from both groups spent just about 2 hours at the museum and spent a little more than half of their time actively engaged with exhibits. Over 90% of the time, both groups use the exhibitions "as intended" (defined as specific activities for each component). For both groups, about half of the time was spent in large-motor activity, while the dominant behavior for the rest of the time was distributed (about equally across groups) in manipulation, construction, computer/video, games, and pretend (in descending order of time spent). These data suggest that at some level, the museum is being used similarly for visitors from both cultural groups.

We also coded for four styles of interaction for each exhibit: adult-directed, child-directed, collaborative, and child independent. We found all these kinds of interaction in both groups, but there were important differences.

Using the standard of prolonged engagement (Humphreys and Gutwill, 2005), we compared how long families stayed at each activity based on what style of interaction they engaged in while doing the activity. On average, families stayed about 3 minutes at any given exhibit. For European-Americans, they stayed 13% longer than average when they were engaged in collaborative interaction (where responsibility for guiding their activity is shared). One can conclude that collaborative interaction facilitated their engagement. For African-Americans, collaboration did not have this facilitating effect. For that group, though, child-directed interaction (where the child guided their joint activity) had a negative effect: the families stayed 60% shorter time than their average length of engagement at those individual exhibits. Here, the conclusion is that child-directed interaction was definitely not a comfortable style of interaction for African-Americans.

We conducted another study comparing Hispanic-American families (who were speaking Spanish) to a sample of museum visitors at large (who were speaking English) in a construction exhibition (Gaskins and Rivera, n.d.). Families were observed for their entire stay in the exhibition, which lasted on average about 15 minutes, providing a rich sample of caregiver-child interaction. Hispanic-American families stayed 33% longer than the comparison sample, averaging about 20 minutes. Hispanic-American male caregivers were more engaged than male caregivers in the comparison group, and the reverse was true for female caregivers. And all Hispanic-American caregivers took significant control during the activity, deciding more often what the family should do initially, engaging primarily in direct instruction, and

initiating leaving the exhibition. In contrast, in the comparison group, children most often decided what to do initially and decided when to leave, and caregivers engaged primarily in scaffolded instruction (guiding the children through open-ended questions based on perceived limitations in the children's own activity). Consistent with the beliefs described above, this study illustrates that the Hispanic-American families embraced the opportunity for engaging in a joint activity, but that the focus for them was not on the children's learning experience, but in accomplishing the goal of building something and that adults, particularly male caregivers, maintained control of the event.

### **Conclusions about Adult Understandings and Exhibition Design**

This article argues for the importance of considering adult understandings when designing exhibitions. Two important kinds of understandings, that are interrelated, have been discussed. The first is that adults, in their role of organizers of children's experiences in museums, use their understandings of their own children and of the exhibitions (as they interpret them), *matchmaking* between the children's abilities and exhibitions. Exhibition designers need to 1) consider the developmental level of activities and try to have a range of levels present in every exhibition; 2) make the complexity of the activities quickly understandable to adults so that they encourage their children to engage at the proper level and they recognize their support role in that engagement; and 3) provide enough information about the process and the content of the activity that they can engage in effective scaffolding.

Another kind of understanding is adults' culturally specific assumptions about learning, its relationship to informal activities like playful and open-ended interactions in exhibitions, and their own role as adults in their children's experiences. European-Americans may presume that 1-2 caregivers will be interacting with 1-2 children, with the adults providing supportive guidance as needed to each child. African-American families may presume that children, either on their own or with their siblings, will be the primary audience, with little direct adult participation, if the activity is playful. Hispanic-Americans, who tend to visit in larger groups and interact as a whole group, are likely to presume that the activity should be flexible enough for multiple ages to find something of interest and that adults will organize and direct the activity. Thus, exhibitions need to be accessible both to children on their own and to large groups with a range of ages.

Cultures vary on their assumptions about what the purpose of coming to a museum is and what role adults will take during their visit. European-Americans share the prevailing assumption of museum professionals that the goal of a museum visit is not only to have fun and to enjoy each other's company, but also to learn, and they identify themselves as having the responsibility to act as *matchmakers* during the visit, to help their children experience and discover new things from the exhibitions. African-Americans may identify learning as one of the goals of a museum visit, but they do not see themselves as participants in open-ended playful activities. Providing some activities that are more structured and goal-directed, more clearly "educational" would probably increase their active participation in activities. And Hispanic-Americans come to the museum

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ready to enjoy the exhibitions together as fun experiences but not looking to turn them into learning-focused activities.

Thinking about the understandings that adults bring with them when they bring their children to a museum, we discover that there is a wide range of expectations based on the age of the children and the cultural group of the family (and, we might add, the genders of both the adults and the children).

These expectations need to be considered by

those who design exhibitions or programs for museums. The best way to address all these differences is to aim to have diverse opportunities in an exhibition that range in difficulty, adapt to a range of social configurations (from individuals to mixed-age groups), and offer adults a range of roles to assume (scaffolder, teacher, or observer). Doing so will insure that when families visit an exhibition, they will find something to do there that feels “just right.” 

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#### End Notes:

<sup>1</sup> *The research reported here was conducted at the Chicago Children's Museum and supported in part by a National Science Foundation grant (NSF Award: 0452550) to the museum.*

<sup>2</sup> *The term "caregiver" is used throughout this article for any adult accompanying children to the museum. This allows us to observe adult-child interactions without having to determine the adults' relationship to the children. Since most of the observations for the studies talked about here were done on the weekends, it is likely that most of the adults observed are parents, not other relatives or paid babysitters.*

<sup>3</sup> *While it is always difficult to characterize accurately the beliefs of an entire group based on a small sample, the size of the differences found in this study so far suggest that there are indeed cultural differences in how mothers in the United States think about play and learning and their role in play. We are working to increase the number of interviewees and to interview parents both in and outside of a museum setting to make sure that the conclusions reported here are indeed an accurate reflection of the cultural groups.*

<sup>4</sup> *From a comparative approach, it is assumed that no one folk theory is more "legitimate" or "valuable" than another. It is sometimes difficult for individuals not to judge others' ideas negatively when they differ from their own. Thus, a European-American might judge an African-American's choice to sit on the sidelines in an exhibition as unengaged and distant, while an African-American might judge a European-American's choice to be in the middle of a play activity as intrusive and fostering too much dependence on adults. Museums need to recognize the inappropriateness of such culturally-centric interpretations of behavioral differences and train staff to observe differences without strong judgment.*