Evaluating Exhibits for Children: What Is a Meaningful Play Experience?

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Museums have a responsibility as educational institutions to provide meaningful and memorable experiences for all of their visitors. However, the educational plans and exhibit designs of many museums neglect the needs of young children. Even research on exhibits and programming for young children remains limited.

To ensure that an educational as well as an engaging play environment is available for children, the Please Touch Museum in Philadelphia, Pennsylvania (for children age 7 and younger) has developed an ongoing research and evaluation program. Beyond the evaluation of single exhibits, the Museum has begun to merge its research data and develop general standards for evaluating its exhibits and programming. In the future, the Museum plans to exchange research data with other museums to gain a more comprehensive understanding of what constitutes a meaningful museum experience for young children.

The present study examines the summative evaluations of two exhibits at the Please Touch Museum. By contrasting and comparing the most and least engaging components of these two exhibits, a theoretical framework is being built for assessing the effectiveness of exhibits for young children.

Theoretical Foundation

Meaningful play engages children in enjoyable and sustained interactive learning experiences. Museums can promote productive play by presenting young children with prolonged opportunities for self-directed exploration and discovery that can be shared with others.

Learning, as described by Piaget, is a highly individual experience and is dependent upon a child's life experiences, knowledge base, and current stage of development (Cole, 1984). To meet the cognitive, physical, and social-emotional needs of each child, museums must offer a variety of concrete and tangible play experiences. For exploring and learning, young children particularly need hands-on activities (manipulation of objects and construction of new creations) and large motor activities (exercise of large muscles). Pretend play (imitative behavior and role playing) is also

important in enabling young children to process and master what they have explored, clarify their identity, and release their emotions. In addition, exposure to a variety of physical experiences helps young children develop their language and understanding of abstract and symbolic information (Bredekamp, 1987).

The depth and length of play experiences are increased by social interaction with others (peers and adults). Verbal and behavioral interaction with both adults and peers develops children's language, decision-making, and social skills. Museums can provide special opportunities for children to engage in intergenerational and peer interactions, allowing them to learn from others what they may not have discovered themselves (Sutton-Smith, 1979).

To make play experiences more personally rewarding, children should initiate and direct their play. Children feel successful and competent when they engage in a task that they have defined for themselves, thus avoiding adult views of completion, achievement and failure. Museums can assist children in their active participation in self-directed play by supplying the concrete, real-life experiences that are so necessary for motivated and meaningful learning (Bredekamp, 1987).

For play experiences to be truly effective, children's attention must be attracted and maintained, giving them time to practice their skills and store new information in their memories. One way to draw children into potentially positive experiences is to combine familiar and novel objects and activities. For young children, the familiar draws them in and makes them relaxed and comfortable, and the novel excites and challenges them. In museums, familiar activities promote more involvement and pretend play, and novel activities increase exploration and introduce new information (Gallagher and Dockser, 1987).

Methods

Two exhibits, *Foodtastic Journey* and *Gateway to China* (on loan from the Children's Museum of Houston), were evaluated in the fall of 1991 and winter of 1992, respectively. For both evaluations, Museum staff members were trained in the evaluation process and collected data at various times and days of the week. The *Foodtastic Journey* evaluation consisted of 51 visitor counts, 225 observations of children's behavioral and social interactions, and 53 adult visitor interviews. The data from *Gateway to China* were based on 104 visitor counts, 280 child observations, and 65 adult visitor interviews. The results reported below are restricted to the data that was most pertinent to the focus of this paper.

Results

The exhibit components that engaged the children most effectively (highest attraction and holding power) were the grocery and kitchen in *Foodtastic Journey*, and the open market and country kitchen in *Gateway to China*. To examine in greater detail the behaviors of the children at the exhibit components (Table 1), the above four most engaging components were compared to the two least engaging components from each of the exhibits (peas and apples in *Foodtastic Journey*; tangrams and calligraphy in *Gateway to China*)).

Table 1

Percentage of Children's Behaviors Elicited by the Most and Least Engaging Components of *Foodtastic Journey* and *Gateway to China*

Behaviors	Most Engaging	Least Engaging
Hands-on	89%	61%
Large Motor	14%	3%
Pretend Play	60%	6%
Adult Interaction	61%	54%
Peer Interaction	37%	10%
Child-Initiated	77%	59%
Child-Directed	71%	69%

T test analysis yielded statistically significant differences ($p \leq .05$) in hands-on ($t[69]=3.55$, $p \leq .001$), large motor ($t[69]=2.85$, $p<.02$), and pretend play ($t[69]=7.65$, $p \leq 0001$) behaviors. Significant differences were also found in peer interactions ($t[69]=4.00$, $p<.0001$) and child-initiated behavior ($t[69]=2.4$, $p<.05$).

To investigate the kind of involvement created by familiar and novel objects and activities, the *Foodtastic Journey's* typical American grocery store and modern kitchen were compared to *Gateway to China*'s novel Chinese open market and country kitchen.

Significantly more children were attracted to the familiar *Foodtastic Journey* components than to the novel *Gateway to China* components ($t[98]=5.21$, $p \leq .0001$). The average time spent at the *Foodtastic Journey* components was 3 minutes 35 seconds, which was significantly more than the average time of 1 minute 40 seconds spent at the less familiar *Gateway to China* components ($t[29]=2.36$, $p<.05$). More children engaged in pretend play in the familiar American components (63%) than in the Chinese components (48%). Interviews of the accompanying adults in *Gateway to China* revealed that 56% believed that their children were exposed to new information while in the exhibit, and 38% in *Foodtastic Journey* believed that their children had seen new information.

Next, exhibit guidelines were developed to represent reasonable expectations for each behavioral category. These guidelines, in the form of percentages of desired participation for each behavioral category, were based on the results of two exhibit evaluations (*Foodtastic Journey* and *Gateway to China*) and findings from other studies when available. The guideline percentages are not rigid standards, but are a way of increasing focused and theoretically-based reasoning.

For hands-on behavior, a level of 80% was chosen. This percentage level was placed slightly lower than the 89% achieved by the most engaging components, since some young and/or shy children prefer to just observe while in the stimulating museum environment. The percentage for large motor activity was set at 20%, above the 14% of the most engaging components (relatively high for the limited opportunities available), to meet the Please Touch Museum's goal of increasing large motor activities within each exhibit. Furthermore, research in the Treehouse at the Philadelphia Zoo demonstrated that large motor behavior between 36% and 49% was possible (Wagner & Massey, 1990).

Pretend play ranged from 60% to 6% in this study. Role playing at the Philadelphia Zoo's *Treehouse* was seen at least once in 15% of the children observed (Wagner & Massey, 1990). Another study stated that pretend play makes up from 15% to 17% of children's play (Fein, 1981). Acknowledging that pretend play may hover around the 15% level, the guideline level was set at 30% with the hope of increasing this valuable experience for young children.

Desired interaction with an accompanying adult was set at 55%, in line with the results of the most and least engaging components (61% and 54%, respectively). The level was not set higher since it was considered important that interactions with others not overshadow the children's own self-directed involvement. Interacting with peers was placed at 35%, slightly below the 37% of the most engaging component, since peer interaction in a museum filled with strangers is difficult. Child-initiated behavior was set at 65%, corresponding to the results of this study (77%) for the most engaging and 59% for the least engaging components). This

level of child-initiated activity was similar to previous research at the Please Touch Museum that found that 60% of the observed children initiated their activity (Gallagher & Dockser, 1987). Child-directed behavior was placed at the 70% level, between the 71% and 69% of the most and least engaging components. Finally, the imparting of new information by the exhibits in this study was 56% for the novel and 38% for the familiar components. A level of 50% for new information was chosen, about average according to the results of this study, and an equal balance between the novel and familiar.

Figure 1 compares the observed activity levels of all the components in *Foodtastic Journey* and *Gateway to China* with the proposed ideal guideline levels. The use of such comparison allows for changes to be made to the exhibit or for deficiencies to be compensated by other areas of the museum.

Conclusion

The present study has examined the museum experiences of young children to clarify what constitutes meaningful play experiences. Comparison of the most and least engaging components in two exhibits demonstrated that young children enjoy experiences providing a high degree (relative to the opportunities presented) of hands-on, large motor, and pretend play activity. Museum experiences also appeared to be enhanced if the children could initiate and direct them, as well as share them with others. The comparison of the more familiar American kitchen and grocery components to the less familiar Chinese market and kitchen components further suggested that the familiar was more attractive, held more interest, and inspired more pretend play, while the novel imparted more new information.

The results of this study revealed relatively little new information—they only confirmed what has been written before. The difficulty in evaluating exhibits for young children has been the lack of concrete information for comparison. Is the finding that 14% of the observed children were involved in large motor behavior high or low? Should we try for more large motor activity? This type of questioning led us to formulate guidelines for evaluating the children's behavior in our exhibits. The guidelines that we have formulated are used only in conjunction with the individual exhibit's goals and objectives, and are interpreted in relation to the behavior elicited by all the exhibits in the museum.

We realize that the setting of these percentages was not "scientific" and changes are anticipated as new data are analyzed. However, this approach represents a movement away from reliance on vague ideas and hunches, toward the establishment of a theoretical framework that will be valid and credible for museum staff, and for those who support museums through grants and admission fees.

Future studies will expand the database, enabling further refinement and differentiation (including age and gender) of the guidelines. With additional data from other museums it is hoped that young children's experiences in museums will become increasingly rewarding and educational.

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FIGURE 1 - PLEASE TOUCH MUSEUM EXHIBIT GUIDELINES COMPARED TO TWO EXHIBITS