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Find the difference: Parent–child interactions at Ankara University Toy Museum

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Abstract

Museums are founded on the preservation, classification and exhibition of artifacts collected from rare cabinets to imperial treasures. The aim of this study was to examine how arrangements in museum differentiate parental scaffolding behaviour. This research was carried out in Ankara University Toy Museum, and 50 parent–child couples participated. It was investigated how the situation of playing 'find the difference' game differentiates parental scaffolding behaviour. Interactions between parents and children in the museum were videotaped and speeches were transcribed. Speeches were divided into scaffolding categories and frequencies were calculated. As a result of the analysis, 20 parents played the game with their children. According to the results of the research, museums can support parents' scaffolding behaviour. In Turkey, there is limited information on how parents are using museums for their children. Studies carried out in this field can provide more information about how practices can be conducted in this field.

Keywords: Scaffolding behaviours, cognitive development, early childhood, museum, informal education.

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1. Introduction

Although museums are founded on the preservation, classification and exhibition of artifacts collected from rare cabinets to imperial treasures, today they have reached a position that focuses on human beings rather than the objects. According to the International Museums Commission, the current definition of a museum is that it is a non-profit organisation in the service of society and social development that is open to the public, conducts research on the materials in its collections, shares information and uses its collection for educational purposes (Karadeniz, 2018). With this understanding, today's museums have transformed their visitors from passive preceptors to active participants through active participation points in galleries, educational programmes, social events and many applications on the Internet. As the faces of the museums turn to visitor experiences, the ideas about how the applications mentioned above should be and what qualifications they should have has pushed the museums to study their visitors. Who is a visitor to a museum? Parameters such as which age group visits the museum most, the educational status of the visitors and their cultural habits give important insights into what the visitors' needs are (Falk & Dierking, 2018). Museum researches provide important data on the forms of exhibition and how we can transform the applications that can be made in the museums according to the needs. In the research conducted by Reiss and Tunnificle (2011) in the dioramas of natural history museums, the speeches made by the visitors were examined, and what the showcases mean to the audience, what information the visitors stood on and ideas put forward about how the diorama exhibitions could be supported were ascertained. In a study conducted at the Pittsburgh Children's Museum, four different prototypes of the recycling application for preschool children groups and their families, which constitute a large part of the museum visitors, were determined. The museum presented different prototypes to its visitors and selected the most effective exhibition for children and placed it in its museum (Louw & Forlizzi, 2004).

The application subject to this research is a game created for the active participation of Ankara University Toy Museum visitors. A large number of individual visitors of Ankara University Toy Museum consisted of parent and child groups. For this reason, the application was designed on how to increase the interactions between parents and children.

In early childhood, the child's primary social environment is formed by the child's parents. Especially in this period, the communication that parents establish with their children is very important for the cognitive and social development of the child. Parents can transfer mental skills (mental tools) such as attention, remembering and problem-solving to children through social interactions (Vygotsky, 1983).

The dialogues that parents establish with their children and the physical and cognitive resources offered to the child are important factors affecting the child's cognitive development. In this context, museums present objects and concepts in a wide variety of fields from archaeology to biology to positively supporting the cognitive development of their children by parents; they also serve as a natural laboratory for researchers to examine the dialogues that take place during this time. Because of this feature, museums have been the subject of many researches in the field of child development and psychology. Haden (2010) emphasises that observing interactions in museums is an important way of examining the development of children of different age groups and the impact of social interactions on development.

How parents express a new concept through social interactions is an important factor that directly affects children's cognitive development. Wood and Middleton (1975) introduced the concept of 'scaffolding' to the literature with their study examining how these interactions occur and which parental behaviours positively affect children's cognitive development. According to them, the duty of parents in interactions is to determine what the child has difficulty with, to direct the child to what he needs and to withdraw when the child can demonstrate the skill without support (Wood, Bruner & Ross, 1976). Although scaffolding behaviour in the above description seem more like a method applied

in the presence of a problem situation, parents use these behaviours extensively in their daily lives, for example, on a nature trip. Scaffolding behaviours are also about structuring the child's cognition with new concepts. Questions and narratives such as drawing attention to a newly encountered object (Do you know the name of the flower there?) or explaining what the rules are in common areas (we need to use items here with other people) are also forms of scaffolding behaviours. In studies on parent–child interactions in the museum, the quality of the interactions has been examined by scaffolding behaviours (Andre, Durksen & Volman, 2017; Gutwill & Allen, 2017; Jant, Haden, Uttal & Babcock, 2014; Pagano, Haden, Uttal & Cohen, 2019; Pagano, Haden & Uttal, 2020). These studies show that the questions asked by parents during their interactions with their children and the quality of their expressions affect children's ability to think critically and to make sense of the objects and concepts exhibited in the museum. At the same time, in a study conducted with children, it was emphasised that children prefer to be with their parents rather than school groups or alone in exhibition areas (Okvuran, 2017). In the same study, children found that school groups progress very quick; but they could spend longer time with their parents with objects of interest and prefer parents' explanations more.

On the understanding of the importance of interacting with the children of parents in the museum, there are a lot of research on how to support this situation (Gutwill & Allen, 2010; Haden et al., 2014; Tenenbaum, Prior, Dowling & Frost, 2010; Vandermass-Peeler, Massey & Kendall, 2016; Willard et al., 2019). In the study carried out by Gutwill and Allen (2010), it was found that the game conditions created in the museum could support scaffolding behaviours of the parents, and the games played by the parents and children in the museum increased the number of questions parents asked their children. Similarly, in a study at the British Museum, it was found that instructions like 'find the biggest pot' and 'How do you measure the size of the pot?' were located in the booklets given to the parents of the open-ended questions posed to children (Tenenbaum et al., 2010).

The social interactions parents have with their children vary according to the culture. In the interactions within the museum, parents also reflect the habits and behaviours of the culture they live in. Ideas such as how much the rules should be adhered to within the museum, how much information should be given to the child, the role of the child listening or discussing during these interactions differ according to the culture in which they are held. Therefore, practices aimed at ensuring the participation of parents in the museum must be in accordance with cultural differences (Gaskins, 2017). For example, in the study by Gutwill and Allen (2010), researchers asked parents to play a game based on body movements; some parents refused the game, thinking it would be ridiculous to other visitors. In the study conducted by Haden et al. (2014), in order to examine the differences between different ethnic groups living in the United States, the scientist costume and a guide or a board with the same questions were compared, which allowed parents to ask more questions, and the ones who had difficulty speaking English. It was observed that they preferred to read (Haden et al., 2014).

In this study, how parents interact within the museum and how similar practices above can differentiate these interactions were examined. There have been quite a few studies in the national literature on the interactions of parents and children in the museum. The application of proven effectiveness in the international field-type testing is effective in Turkey, is special and must be observed.

2. Method

In this study, it was examined how the scaffolding behaviours provided by the parents to their children in the museum differ depending on whether the 'find the difference' game is played or not. In the research, an enriched design and the descriptive scanning model were used. The enriched pattern, in short, can be summarised as the simultaneous collection of qualitative and quantitative data, which evaluates whether the data support each other (Buyukozturk, Cakmak, Akgun, Karadeniz & Demirel,

2017). The descriptive survey model is a research approach that aims to describe the existing situation without interfering with it (Karasar, 2020).

In the study, the interactions of parents and children who came to Ankara University Toy Museum were observed in the museum and the speeches wherein parents supported the cognitive development of their children were examined. The dialogues of parents and children in the museum, who agreed to participate in the study, were videotaped and these records were transcribed. The dialogues were coded according to the scaffolding strategy categories compiled from the studies in the literature, and their frequencies were recorded and used for quantitative analysis.

The scaffolding strategy included in the study was activation / sustaining strategy and parents' attempts to get the attention of their disengaged child (Kontos, 1983). For example, 'There were trains in this showcase, let's have a look together'. 'Try me on your horse should be so fun'.

The simple explanation strategy included the speeches of the parents about the objects in the museum, which do not contain detailed information. For example, 'This is a spinning top'. 'This is a musical instrument'.

The detailed explanation talks were the detailed information that parents give about a specific object (Ornstein, Haden & Hedrick, 2004; Waters, Camia, Facompre & Fivush, 2019). For example, 'This is a strobe engine. The mechanism for this is …'.

The open-ended questions (5N1K) included questions that are not yes or no answers, such as What are the objects in the museum? What material they are made of? and What they are used for? (Haden et al., 2014). For example, 'Which vehicle does this showcase look like?'

The connecting strategy tells of a new information or phenomenon based on a situation or information known to the child (Jant et al., 2014). For example, 'You also had a tricycle when you were little, or this one look like it, but it's made of metal'.

The mirroring strategy is the responses given by parents to their children about the sentences or the things they are doing (Acosta, Polinsky, Haden & Uttal, 2021; Neitzel & Stright, 2003).

Confirming mirroring includes parents' affirmative responses to the children's speeches and actions within the museum. For example, 'Oh yes, there was a little mouse here, I didn't notice'.

Corrective mirroring includes corrective responses to children's wrong information. For example, 'No, this is not a slingshot'.

Studies in the literature have mostly evaluated confirming and corrective mirroring behaviours together (Carr & Pike, 2012; Hubbs-Tait, Culp, Culp & Miller, 2002), but the reason why they were evaluated separately in this study is that parents approve the comments of their children and the reactions they give to the misnomers and comments made by the children. To examine how much effort they put in to get the right information the following hypothesis was proposed:

Hypothesis: Does the fact that parents play the 'find the difference' game with their children in the museum differentiate the scaffolding behaviours they apply to their children?

2.1. Participants

The research was conducted with 50 parents who came to Ankara University Toy Museum in 2017–2018. A total of 33 mothers and 17 fathers participated in the study. The average age of the parents participating in the study was 38.12 years. A total of 25 boys and 25 girls participated in the study. The average age of the participating children was 6 years, with the youngest being 4 years and the oldest being 8 years.

2.2. Data collection tool

The data were collected using the 'Parent–Museum Interaction Form' created for the research. This form was developed to examine the scaffolding behaviours that parents apply to their children. The categories of scaffolding behaviours used in the study were compiled from the studies conducted in the field (Boland, Haden & Ornstein, 2003; Carr & Pike, 2012; Gultekin-Ahci, 2016; Kontos, 1983; Neitzel & Stright, 2003). The observed behaviours were activation/sustaining, simple explanation, detailed description, open-ended question, connection, confirmatory and corrective reflection (Chart 1 Table 2). In the study, how often parents used these behaviours and how they differ according to whether they participated in the 'find the difference' activity in the museum or not were examined.

The frequency distributions of scaffolding behaviours applied by parents in the museum were examined. Since the data did not show a normal distribution, the difference between the frequency of the behaviours and the difference between 'finding the difference' game not being played was analysed with the Mann–Whitney U test.

In order to examine the reliability of the classification of scaffolding behaviours in the form of parent and child learning interactions, 15 of the 50 parent–child records were randomly evaluated by a second observer. The second observer is a classroom teacher working in the field of special education. The observer was informed about the scaffolding behaviours in the form before evaluating the videos. Cohen's Kappa values of the research data and the data belonging to the second observer were calculated and it was found that $K = 60$ and $p < 0.001$.

3. Results

Twenty of the 50 pairs of visitors who came to the museum played the 'find the difference' game. 15 mothers (4 girls and 11 boys) and 5 fathers (1 girl and 4 boys) participated in the game (Table 1). The higher rate of participation of boys may have been due to the 'finding the difference' game taking place in the construction window, the more attention of the boys to that showcase or the more parents' orientation towards that showcase.

Table 1. Ages of children participating in the 'find the difference' game

Children's ages	Number of children	Percentages
4.00	3	15.0
5.00	4	20.0
6.00	5	25.0
7.00	5	25.0
8.00	3	15.0

Table 2. Distribution of scaffolding behaviours applied by parents in the museum

	Activation/ Sustaining	Simple explanation	Open-ended questions	Detailed description	Connection	Confirming mirroring	Corrective mirroring
N	50	50	50	50	50	50	50
Average	12.22	4.04	5.78	11.04	5.16	10.94	1.44
Minimum	2.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	52.00	15.00	41.00	34.00	23.00	49.00	5.00
Total	611.00	202.00	289.00	552.00	260.00	547.00	72.00

Table 3. Frequencies of the scaffolding behaviours employed by the parents in the museum

Strategy	*F*	%
Animation/Sustaining	611.00	24.12
Detailed description	552.00	21.79

Confirming mirroring	547.00	21.59
Open-ended questions	289.00	11.41
Connecting	260.00	10.26
Simple explanation	202.00	7.97
Corrective mirroring	72.00	2.84

As a result of the analysis, it can be seen that the parents mostly use the behaviours of mobilisation/sustaining, detailed explanation and affirmative reflection in the museum. The least used strategy is corrective reflection, with a rate of 2.84% (Table 3).

Whether the 'find the difference' game played in the museum differentiates the supporting behaviours of the parents in the museum was examined by the Mann–Whitney U test (Table 4).

Table 4. Mann–Whitney U test results according to playing the 'find the difference' game of scaffolding behaviours

	Simple explanation	5n1k (open-ended questions)	Detailed description	Connecting	Confirming mirroring	Corrective mirroring	Activation/ Sustaining
Mann–Whitney U	215.500	135.000	219.500	253.000	199.000	150.000	120.000
Wilcoxon W	680.500	600.000	684.500	718.000	664.000	615.000	585.000
Z	−1.686	−3.296	−1.596	−0.936	−2.004	−3.094	−3.574
Asymp. Sig. (2-tailed)	0.092	0.001	0.110	0.349	0.045	0.002	0.000

According to the Mann–Whitney U test, there was no significant difference in the number of implementations of simple explanation, detailed explanation and bonding behaviours as a result of whether the 'find the difference' game was played or not. However, it was found that there was a significant difference in the number of applying the find the difference game, asking open-ended questions, confirming–corrective reflection and activating–maintaining behaviours ($p < 0.05$).

4. Discussion and conclusion

It is observed that during the museum interaction, scaffolding behaviours such as detailed explanations given by parents for their children, connections made with past experiences and open-ended questions that strengthen reasoning, encouragement to talk etc., provided the child with a strong and permanent understanding of the concepts encountered (Ash, 2003; Boland et al., 2003; Crowley, Callanan, Tennenbaum & Allen, 2001; JanƠt et al.,2014). In order to increase the quality of interaction between parents and children, museums use question cards or games to be played together while visiting the exhibition (Benjamin, Haden & Wilkerson, 2010; Jant et al., 2014; Tenenbaum et al., 2010; Willard et al., 2019). The basic principle behind these conditions is to solve the problem together. There are studies showing that such practices increase the capacity of parents to ask open-ended questions or establish bonds. However, it has been determined by many researchers that the effect of such facilities provided by museums varies according to the cultural difference (Briseno-Garzon & Anderson, 2012; Briseno-Garzon, 2013; Gaskins, 2008). To put it briefly, during the museum experience, the relationship of parents with their children demands for obeying the rules, the way of speaking or the level of participation are seriously affected by cultural norms (Borun, 2002). In Turkey, information on such museum interactions or on which scaffolding strategy is preferred, in particular, is rather limited. This research focuses on how this interaction takes place in a museum in Turkey and to what extent gallery practices differentiate these interactions.

In the study, it was examined how participation in the find the difference game played in the museum differentiates the scaffolding behaviours applied by parents to their children. During the visit

to the museum, the instructions of the game were given by posting 'find the different toy' in one of the showcases for the parents to discover the find the difference game. This directive was implemented by 20 of the 50 parents visiting the museum. During the research, simple-detailed explanation, asking open-ended questions, connecting, affirming reflection, corrective reflection and activation–maintenance behaviours were observed. During their interaction in the museum, the parents mostly used the behaviours of sustaining action, affirming reflection and detailed explanation. The parents made an effort to attract the attention of their children, made explanations to understand the new encounter and displayed a compassionate attitude in this process. In these interactions, while the parents acted as an affectionate museum guide for their children, on the other hand, the children adopted the passive listener role. In the game 'find the difference', the child was given a more active role depending on the interactions in the museum; in this way, the child had become the solution partner of the problem encountered. It was observed that parents who participated in the find the difference game asked more open-ended questions to their children than those who did not play the game. They used confirming–corrective mirroring and activation / maintenance behaviours, while parents mostly used the behaviours of activation, sustaining, corrective mirroring and detailed explanation during their interactions in the museum.

Observations on the museum show that parents use the activation/sustaining strategy to draw the child's attention to a particular object in the museum window. In the case of play, parents enabled their children to make more attempts to reach the conclusion of 'what is different'.

The open-ended questions strategy can be summarised as attempts by parents to engage the child in the conversation by asking questions to the child. The method of asking open-ended questions enables the child to generate ideas about what she/he has just encountered, to interpret it, to remember what she/he knows in the past and to establish the link between the common and the new (Jant et al., 2014). Studies focusing on museum interactions reveal that learning is more permanent in children if parents ask more open-ended questions (Benjamin et al., 2010).

In the observations made in the museum, it was seen that parents used this strategy to find out what children know about the toy they talked about when not participating in the game. In the game situation, they asked open-ended questions in order to understand how the child thinks in order to find the correct answer. For example: What colour is the different toy? Why do you think that toy is different? In some cases, they used open-ended questions to give clues to children. For example, What do you think the guys in this showcase are doing? What are the items here mostly used for? etc. The open-ended questions strategy has a structure that enables the child to have more say in the interaction compared to other observed behaviours. According to the findings in the literature, this strategy is the most used in interactions in the museum (Jant et al., 2014; Palmquist & Crowley, 2007; Song et al., 2017). However, observations made during the research revealed that parents used this method very rarely. Instead, the frequent use of activating/sustaining and detailed description behaviours proves that these interactions are mostly carried out under the direction of parents. Nevertheless, the parents preferred to ask more open-ended questions when the game is played. The increase in open-ended question strategy in conditions such as play situations also indicates that the child reaches a more active position during the interactions in the museum.

In the observations made during the study, it was seen that confirming and corrective mirroring behaviours were used by parents to confirm their children's thoughts or to correct a wrong determination. Although corrective mirroring is a behaviour that parents use quite often outside of the game situation, the goal of getting the right result in the game may have enabled parents to use this strategy more. It has been observed that corrective mirroring is used less than confirming mirroring during interactions in the museum. During the speeches in the museum, parents can infer that they either avoid correcting the wrong conclusions of the children or that they avoid questioning the children's inferences. Corrective mirroring in the game has become more functional in order to find the correct answer. For example, 'No, it is used in construction; we are looking for a toy that is not used in construction'. Therefore, the corrective mirroring strategy may have been used more during

the game. With the corrective mirroring strategy, the parents encourage the child to rethink and participate, and this structure shows similarities with the open-ended questions strategy. Open-ended questioning and confirming mirroring behaviours enable the child to reason more strongly and to approach the subject critically while making sense of a new phenomenon. In cases where these two behaviours are used, the child assumes a role of actively answering questions and executing ideas rather than being only a listener. This role, which is less encountered during museum interactions, becomes more frequent when the game is started.

In summary, the state of play supports the implementation of behaviours for activating / maintaining parent–child interactions, open-ended questions and corrective and confirming mirroring within the museum.

An instruction given in the exhibition area (find the different one) and a change in the display (placing a non-theme toy) are important in terms of restructuring the learning environment for parents and children. Also, producing a problem that the family can solve together can help improve interactions. This pilot study conducted in Turkey also revealed that parents are the ones who direct the interaction through narration and the children are only listeners. On the other hand, the existence of a common problem has increased the use of behaviours that encourage the child to participate. However, the fact that the findings of this study have been obtained from only one museum provides a limited opportunity to understand the conditions in Turkey. To fill this gap, it is necessary to collect data from museums and science centres with different themes.

5. Recommendations

Studies on the quality of interactions in the museum show that cultural differences can significantly differentiate this process. It is, thus, also needed to be seen in the depictions of Turkey that interaction needs to be more in this area of research in science centres and museums to plan how they can support the parents in the museum. This research was conducted in Ankara University Toy Museum. The comparison between HIAs could not be made, as the museum's visitor population mostly comprised middle SIA visitors. A similar study conducted in a museum to reach a wider audience can better describe the differences between parental interactions in Turkey. This may support information on how applications should be.

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