

## The Influence of Family Behavior on Family-Child Interaction and Children's Science Learning in Informal Learning Environments: An Example of the Sasalı Natural Life Park

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**ABSTRACT:** This study has been done by using, the case study method, one of the quantitative methods, to determine the behaviours of the families with children that come from informal learning environments to Sasalı Natural Life Park and what type of effects it has on science learning of the children. 26 families (26 mothers, 24 fathers, 47 children) attended the study voluntarily according to convenience sampling, one of the improbable sampling methods. Families' behavior during their visit, their way of interaction with their children and how long they stayed in each part of the was followed with by the researcher and taken down notes to observation notebook as the necessary notes. After completing the visit, interviews were done with the parents and children by determining an appropriate environment. During the interviews, 6 open ended questions were asked to the parents and children. The answers, which were obtained from the interviews, and the notes, which was taken with observations, were evaluated by using frequency spectrum analysis by the researcher. When the obtained data were analyzed, while their visit to Sasalı Natural Life Park, it was seen that the families -asking questions, explaining and describing, trying to answer the children's questions without ignoring and reading the information signs- were in more interaction with their children and the children learnt new information and didn't have difficulty in the learning process.

**KEY WORDS:** *Informal learning environment, Family behaviours, Family-child interaction*

### I. INTRODUCTION

Human is a creature that learns from the moment he was born and refreshes himself by sustaining it for life. In this case, it would be wrong to think that learning can only happen in a closed-door area like a school by listening to what is told by the teacher. Considering that learning only takes place in formal settings, all learned information outside the school will be ignored (Eshach, 2007). Learning can also happen outside the school environment. For example, it is possible to learn from family elders, parents, and relatives in the home environment; from friends and colleagues in social settings, from neighbors; from mass media such as television, radio and cinema; from social areas such as Zoo, science centers, museums, botanic gardens, natural education, etc. In other words, it is possible to learn from nature itself (Türkmen, 2010). There are some criteria for this learning process to be called informal. Informal education is a process of learning that develops spontaneously without any planning, without knowing where to come from, can be a family and close friend environment, can be realized by a forest area or by a lake, requires that the educator be an expert in the field and should communicate with the other people.

In order for individuals to gain the necessary knowledge, skills, attitudes, and understanding, informal environments must have conditions such as *fun, voluntary, self-directed, hand on learning, open-endedness, non-sequential and purposefulness*. However, it is impossible to talk about the existence of an informal learning environment that includes all of these conditions.

In addition to formal education applied in schools, informal education is used for support and the learning environment is moved out of the classroom environment which is a restricted area. In this way, the learning environment becomes more appealing for students and changes the attitude and motivation of the students towards the lesson in a positive way. In this process, students are confronted with problems from everyday life, to solve these problems on their own, with the hand on learning principle, they can find solutions (Winston, 1995 as cited in. Dori& Tal, 2000; Melber& Abraham, 1999).

Informal education is carried out in informal learning environments where informal resources are available. To mention informal learning environments briefly:

- *Areas where social development and social problems are discussed:* These are the areas of small communities that come together for a specific purpose. Although the modalities of each group in this area are the same, their purposes may differ from each other.
- *Non-governmental organizations with social content:* They are the areas where are the solutions find to various problems in the society.
- *Children and youth clubs:* They are the areas where children and young people come together to increase their learning levels, to take part in various projects, to give them and adults social sensitivity and to develop solutions to the problems they encounter.
- *Activities for art:* They are the activities created by the plays, based on real or unrealistic life stories, which make the audience entertained or sadden, but also make them think and inform.
- *Schools and universities:* Although it is known as formal educational institutions, it is the areas where informal education can be actualized with the clubs and associations established by the students (Lewenstein, 2001; Martin, Falk, & Balling, 1981; TezcanAkmehmet, 2002a-b).

One of the informal learning environments is the family. Human beings are always intertwined with their parents and family from the moment they are born. Therefore, the first steps in the name of learning are taken in the family environment, including parents and family elders. Family groups are defined as intergenerational social units. In other words, families share their knowledge, experiences and cultural values with the next generations and have a guiding characteristic to them (Borun, 2002). No doubt, this sharing of families among generations supports learning among family members.

In recent years, especially abroad, research on science learning in informal environments has begun to focus on families. In general, these studies aim to explore the interactions of family groups in informal environments, how long they spend in these environments, and the nature of science learning in informal environments. However, when we examine our body of literature, studies on family groups in informal learning environments are not yet sufficient. Researchers began researching by examining the behavior of families in the museum and analyzing what families were doing while visiting these places. The previous studies were more descriptive and interested in how families interact with specific exhibitions in a specific informal science environment. Later, the studies investigated the findings of descriptive studies and investigated the specific aspects of the interactions and agendas of family groups in a more systematic way. Some examples of the results of a variety of research on family behavior are given below:

A study by the Lakota National Museum of Natural History (1975);

- ✓ Adults have a leadership role in informal environments,
- ✓ According to the child's choices, the results of the parents determined the informal environment to be visited were reached.

A study by McManus (1987) at the Natural History Museum;

- ✓ In adult groups, women can make more discoveries than men,
- ✓ In groups with children, men play a leading role and women play a listening, malleable and protective role against their children were concluded.

In studies conducted by Diamond (1980, 1986) at the Lawrence Science Hall in Berkeley and Exploratorium in San Francisco, the parents' reading of signs and graphs in informal environments has shown that the rate of reading signs and graphs is higher than in children.

#### *Adult Learning In Family Groups*

Adults make up an essential part of the population to visit informal environments such as museums. At the same time, adults are defined as individuals who form the dynamics of the family and have a decision-making role (Dierking & Falk, 1994). Adults show scientific learning during museum visits. Museums are where families play games and learn with speaking. A language is an essential tool for learning and teaching. By mediating events, it allows people to connect with other people, not just objects in the world. Different family members know different things, and different knowledge leads to different family-child dialogue (Diamond, 1986, Ellenbogen, 2002, Hilke, 1987).

As a result of many research on adult learning processes, four critical factors were found in adult learning. These factors are:

1) *Self-directed learning:* It focuses on how adults control their learning, how to find appropriate resources, what learning methods to use, and how to evaluate their progress. In short, it is defined that adults are responsible for their learning throughout the learning process. Adults who learn in this way determine how and in which ways they will learn, and manage and evaluate the learning process by themselves.

2) *Critical reflection:* This course aims to examine adults making equitable reflections using their logical and dialectical thinking skills, doing advisable studies and using their discernment skills. Also, adults, by making statements at cognitive level, realize critical perspectives in people's way of thinking and realize attitudes towards events or circumstances and accomplish learning. As a thought, critical reflection focuses on three interrelated processes;

- Reorganization and modification of adults by questioning the knowledge they have,
- The process of gaining an alternative viewpoint of adults for ideas, actions, and forms of ideology,
- The process of identifying hegemonic aspects of dominant cultural values of adults.

3) *Experiential learning*: According to Lindeman (1926), adult education is a collection of knowledge, attitudes, and understanding acquired through the evaluation of people's life experiences (cited in Brookfield, 1995). Adult education has a significant place in the lives of individuals. People can change their existing knowledge as they acquire new experiences over time. There are two main points in this thought.

1. Experiences can never be taught directly to another person. However, socio-cultural, moral, ideologically framed and shaped, that is, knowledge is structured through values that make us ourselves.

2. Experience is not associated with their characteristics, their lack or their abundance, whether they are qualified or not.

Every person has different characteristics. For this reason, it may not be possible to achieve the same results even if different people encountered the same experience.

4) *Learning to learn*: It is that adults are aware of their learning conditions during the learning process. It is the situation in which people are aware of the knowledge they are missing and think that they should develop themselves in this regard. Learning to learn that is a skill beyond academic boundaries should be considered as a lifelong learning project.

Ideal informal learning environments should be prepared for adults to learn. For these environments to be ideal;

1. An entertaining environment where adults can spend a pleasant time,

2. Adults come voluntarily to this environment and are ready to learn,

3. They determine what to learn and how to do it themselves,

4. While learning, through hands-on learning, in the event of time spent and interactive environments where they can interact provided,

5. In the learning process, pressure factors such as the instructor or time that restrict the movement of adults are removed,

6. The individual differences of people are taken into account, and in the learning process, people do not use their scientific process skills in a specific order (first, do the measurement, then interpret the data),

7. The tour that settled for adults should have a purpose, not just to have fun in it, but also to be prepared as a host of learning environments (Orion & Hofstein, 1994; Storksdieck, 2001; Tezcan Akmehmet & Ödekan, 2006, Türkmen, 2010, cited in Türkmen, 2015).

Moussouri (1997) found that six factors in informal learning environments affected the motivations of adults. These are the environment, education, life cycle, social event, practical situations, and fun.

1) Environment: People describe environments such as museums as places to spend their spare time pleasantly. They see it as the places they take guests from out of town for a walk.

2) Education: Since Museum environments have cultural content and an informative structure, they have an educational role.

3) Life Cycle: People who come to museums see these visits as an activity that takes place at certain times.

4) Social event: Going to the museum, going out, entering the circle of friends constitutes a social event.

5) Practical situations: Weather, proximity to the Museum, time, external factors such as entrance fees constitute.

6) Fun: People who come to places like museums often prefer to spend their free time and to come for purposes such as having a pleasant time.

#### *İzmir Sasalı Natural Life Park*

Izmir Sasalı Natural Life Park (SDYP), Turkey's First Natural Life Park, in 2008, in Çiğli Sasalı located on an area of 425 acres. Izmir Metropolitan Municipality decided unanimously in 2010 to apply for candidacy to the European Association of Zoo and Aquarium (EAZA). As a result of the examinations and inspections, the membership of SDYP to EAZA was finalized on April 3, 2011. SDYP has more than 125 species of animals and more than 250 species of plants in 28 different shelters. In SDYP, there are animals such as pygmy goats, Cameroon sheep, rabbits, pigeons, various chicken breeds, turkeys, Kangal dogs, donkeys, and land or water turtles at the Special Children Zoo established for children. Teachers who want to bring their students to SDYP must make an appointment by filling out the visitor appointment form on SDYP's website. The student groups are informed about the SDYP in the instruction room about wild animals, wildlife protection and Zoo Gardens by the trained staff who are in charge of SDYP. In addition to the skeletons belonging to animals who lost their lives in the last period, there is also an exhibition area where structures such as leather, hides, antlers, feathers, and eggs are seen. Thanks to the routing signs and boards placed inside the park area, visitors can easily navigate inside. Also, information sheets are placed in front of every shelter so that they can access information about the animals found in the park (İzmir Doğal Yaşam Parkı, 2013).

The zoo is an environment where people can see wild animals and reptiles that can be described as exotic animals such as snakes and crocodiles. This type of environment, which attracts the attention of children, is becoming a place of time for families.

This study aimed to define the effects of the behavior of families with children on family-child interaction and children's science learning in informal learning environments due to the lack of studies on family groups in informal learning environments.

## II. METHOD

### *Research Pattern*

Case study method, which is one of the qualitative research methods, was used in the study. The case study is a method in which a situation or event that is mostly taking place on a group of participants is examined and evaluated in detail (Büyüköztürk et al., 2008). It also provides a detailed examination of information that can be ignored by other research methods (Punch, 2005). The researchers who conduct a case study try to put forward the problem by asking the question of how (Yıldırım&Şimşek, 2005). The data obtained from the study were evaluated by frequency analysis.

### *Population and Sample*

The research population is composed of families with children who visit Sasalı Natural Life Park in Izmir. However, due to the difficulty of reaching the entire population, the path of sampling was chosen. The sample group consists of 26 families (26 mothers-24 fathers – 47 children), which are determined by the suitability sampling from non-probability sampling methods. In the table below, the mean age of the parents was 20.76 years. (Table 1).

**Table 1. Families Age Distribution**

Age	3-5	6-10	11-16	28-33	34-39	40 and Above
f <sub>Mother</sub>	-	-	-	17	9	-
f <sub>Father</sub>	-	-	-	10	13	1
f <sub>Children</sub>	22	15	10	-	-	-

### *Data Collection Tools*

During the trip, how the behavior and discourses of families to their children in each section were followed and noted in an observation book by the researcher for how long they were in that section. The use of structured observation forms is not preferred in order not to limit research and to provide a rich variety of data.

In addition to the observation, the parents and children were asked six open-ended questions at the end of the trip. The researcher prepared four of these six open-ended questions in advance, and three experts in the field of the University have been made necessary corrections in line with their views and the interview questions have been made with the content validity. The researcher prepared the other two open-ended questions just before the interview with the children by taking into consideration the sections visited at the time of the trip, and sometimes by selecting the questions that parents have asked their children during their visits. The data obtained from these questions were evaluated after the opinions of 3 experts in the field.

### *Data Collection Process*

Data were collected from 26 voluntary families who agreed to participate in the study during the Four weekends (April and May, Saturday and Sunday). During the trip, the observation made by the researcher, how long the parents were in each section and the behavior and discourses of parents against their children were recorded in an observation book with notes recorded. Besides, after the trip, interviews were done with parents and children and the responses from these interviews were evaluated by the researcher. According to the data obtained, the effects of family behavior on family-child interaction in SDYP and science learning of children were determined.

## III. RESULTS

Family behaviors observed at the end of the trip were analyzed by frequency analysis, and their behavior was categorized under particular topics. At the end of the research, family behaviors were divided into two headings as verbal and nonverbal behaviors and 7 categories.

*Verbal behavior categories:* Termining/Naming of living species, Definition/Explanation, Question asking (being divided into two sub-categories: physical characteristics of the living species and its habitat), Reading the signs and Answering the child's questions.

*Non-Verbal Behavior category:* Displaying.

Table 2 shows the frequency analysis of the behavior of families during their visits to SDYP. Bu tablodaki değerler sadece anne-babaların örneklem sayılarını dikkate alınarak hesaplanmıştır. The values in this table are calculated only by considering the sample number of parents. The number of children in the sample is not included in this calculation.

Table 2. Analysis Of Family Behavior In SDYP

	f <sub>MOTHE</sub> R	% <sub>MOTH</sub> ER	f <sub>FATHER</sub>	% <sub>FATHER</sub>
<b>Verbal Behavior Categories</b>				
Termining/Naming of living species	25	96,2	23	95,8
Definition/Explanation	12	46,2	15	62,5
Question asking 1 (physical characteristics)	7	26,9	3	12,5
Question asking 2 (habitat)	4	15,4	3	12,5
Reading the signs	2	7,7	4	16,7
Answering the child's questions	13	50	16	66,7
<b>Non-verbal Behavior Categories</b>				
Displaying	26	100	24	100

As shown in the table, although mothers (96.2%) and fathers (95.8%) termining/naming of the species ratio is close to each other, it is observed that mothers have a higher prevalence of this behavior. Mothers often told their children the names of animals during their trips to SDYP. ("Look, there are lions here." or, "There are bears out here my son." and so forth).

Again, looking at the values in the table, it is observed that the mothers (26.9% and 15.4%) are more dominant in the questioning behavior. Question-asking behavior is studied in two sub-categories: physical characteristics of living species and their habitat. The questions parents ask about the physical characteristics of living species are in the form of, "Why do you think pelicans' beaks are like bags like this? What does that do?" "What is the characteristic of ostriches?" "What good are the bumps on the backs of camels? What do you think he is hiding inside?". On the other hand, questions about the habitats of living species are in the form of; "How can giraffe and ostriches live in the same area?" "Why do you think there's a puddle in the lion, tiger, and puma sections, and there's no puddle in the Bobcats and hyenas section?". During the trip, it is observed that the children's curiosity about animals and their eagerness to learn are increasing thanks to these questions asked by their parents.

Children, who became more open to learning, started asking their parents questions this time and asked them to make statements. In this case, in line with the values in the table, it is observed that the fathers came to the fore (fathers 66.7% mothers 50%). In the face of the questions that fathers ask their children, they show the behavior of answering, defining/explaining and reading the signs more than mothers do. "Dad, look, the bear in this picture is dark, and its feathers are red, but why this bear is white?" is one of the questions that the children asked. The father has answered this question in the form of; "I do not know, my daughter, they put a white bear here and a red one there."

In the Non-Verbal Behavior category, the behavior of displaying, it is observed in the table that all of the parents showed this behavior. Non-Verbal displaying behavior is repeated whenever verbal behavior is performed.

After the end of the observation, a suitable place was settled for the interview with the volunteer parents and children. First, parents and then children were asked questions about the pre-arranged interviews. Also, the children were asked two questions about the animals they visited during the trip, to determine their learning status.

Interview questions asked to parents and analysis of these questions were given below.

### 1. Question: What is the purpose of your arrival here?

Table 3. The Purposes Of Families To Come SDYP

	f	%
To show and introduce animals to my children	22	44
For the family to have a nice time and fun	11	22
To increase the level of knowledge of my children	11	22
Because my children want to go around	4	8
For the socialization of my child	2	4

When the values in the table are examined, it is observed that the purpose of the families to come to SDYP is mostly (44%) have the idea of "showing and introducing animals to my children", then (22%) the feeling of "having fun with the family" and finally (22%) the idea of "raising the level of knowledge of my children". What is unexpected is that the feeling of having a good time and having fun in the family comes after the idea of showing and introducing animals, and the desire to increase the level of knowledge of the children with a sense of having a good time in the family is the same ratio.

## 2. Question: Do you want to come here again?

This question was asked to both parents and children. 88% of parents want to come back to SDYP. The reasons for this; "This time because the weather is very hot in our visit, so we did not find a chance to tour detailed, we want to look at the parts we cannot see when we come again." and "We didn't realize what we were going through with the kids, so we'd like to come back." they stated. The remaining 22% include answers from parents who come from outside the city. These families said, "We have come anyway, so there's no need to see the same animals again." they said they did not want to come.

Interview questions asked to children and analysis of these questions are given below.

### 1. Question: Has there been any new information you learned during your stay with your family in SDYP today? If so, what is this information?

Table 4 New Information Children Learn

	f	%
I have learned something, but I cannot remember of it right now	12	25,53
No, I did not learn anything new because I am watching a documentary	10	21,27
The weather was very hot, and we could not go in detail	7	14,89
The giraffes and ostriches live together in the same area	6	12,76
Pumas cannot roar	4	8,51
There were a lot of monkey species (Mara, black macaque, vervet, etc.)	4	8,51
Maras, on their cheeks, store the food they eat	2	4,25
Only tigers can swim from wild animals	2	4,25

25,53% of the children said, "I have learned something, but I cannot remember of it right now.", 21,27% said, "No, I did not learn anything new because I am watching a documentary" and 14,89% said, "The weather was very hot, and we could not go in detail." It is observed that 12.76% of those who learn new information are "The giraffes and ostriches live together in the same area" and the remaining children have obtained new information about some animals at low rates.

## 2. Question: How did you learn this new information?

Table 5. The Way Of Learning New Information

	f	%
With the explanations of my family	19	40,42
With the documentary, I watch on TV	10	21,27
I have not learned any new information	10	21,27
With my family's questions	6	12,76
By reading the signs	2	4,25

While 40,42% of children say that they have learned new information with their parents' explanations, 21,27% say that they have not learned new information and 4,25% say that they have learned by reading the signs. It was concluded that their parents had a significant impact on children learning something new.

As family behavior affects children learning new information, family behavior also affects family-child interaction. Instead of showing animals to their children and telling their names, it was observed that family behavior, which makes more explanations, asking questions and answers to the questions of their children, kept family-child interaction alive during the trip. Families with other behaviors have completed their trips without any interaction with their children. In interviews with their children, it was found out that the children were not able to learn any new information.

### 3. Question: Have you had a chance to amend any information that you know is wrong? If so, what is this information?

Table 6 Amendment Of Incorrect Information

	f	%
No, it did not happen	39	82,97
Puma was also a mountain lion	4	8,51
The stripes of each tiger are different from each other	2	4,25
The eyesight of the elephants is undeveloped	2	4,25

When asked if they thought they had already known but had the opportunity to correct what they knew during the trip, it was determined that 82.97% of the children did answer "no" and the rest of the children corrected some wrong information. Also, children who read the information signs on living species during the trip started to say the proper names of the living species in which they misspelled their names.

#### 4. Question: Do you want to come here again?

89.4% of children want to come back again to SDYP. The children said, "I am very happy to come here and see and get to know the animals." "One of the places where we can spend family time, I want to come every weekend." in their words, they said they want to come back again. 10.8% of the children said they were exhausted because the weather was very hot, and therefore they did not think to come back.

At the end of the observation, the information questions prepared at the time of the interview with the children and the learning conditions of the children were determined by the researcher. Each child was asked two questions of knowledge and analyzed following their answers.

Table 7 Analysis Of Data That Answers Information Questions

	f	%
Those who cannot answer the first question and answer the second question	23	48,9
Those who answered both questions	17	36,2
Those who cannot answer both questions	7	14,9

It is observed that 48.9% of children respond to one of the questions, while 36.2% respond to both questions. The ratio of those who cannot answer both questions is 14.9%. Some of the questions asked to children:

- How many bear species are there?
- Which bear species are there in SDYP?
- What are predatory birds?
- What species are found in the African savannah?
- What is the living being that can live for a year without eating?

#### IV. CONCLUSION and RECOMMENDATION

When the data obtained from the study is analyzed, it is observed that family behavior has a prominent place in children's learning (especially in science education due to the environment). 40,42% of children say they have just learned the knowledge they have learned by the explanations of their parents. It was observed that the children of families who asked questions about the habitats and physical characteristics of living species during the trip, made explanations and descriptions, tried to answer the questions of their children without ignoring them and read the signs had more interaction with their families during the trip, learned new knowledge and had no difficulty in the learning process. However, it has been observed that only families showing animals and telling their names can hardly interact with their children, and these behaviors negatively affect the children's learning. Similar studies in the literature confirm these results. In the same study, it was found that children in contact with their parents were more successful regarding learning conditions and thinking about events or situations and being able to comment on them. Also, parents who explain this information have a significant role in making sure that children can combine the information they have just learned with the information they have already known (Crowley & Galco, 2001). When parents explain the strategies and structures of new problems and theories to their children, children can produce better and more effective solutions to the problems they face in daily life (Crowley & Siegler, 1999). When parents can teach their children their ability to think scientifically, children will begin to set their own future goals (e.g., Falk & Dierking, 2000). Among the results obtained in this study, few families were able to interact with their children and have a positive effect on their children's learning. In order to change this result, it is recommended that the activities for families be organized in SDYP, that experts who can give information about animals be present in SDYP environment and that parents be able to get information from these experts at any time. Through events that can be organized in SDYP,

- Will be able to offer opportunities to increase the interaction between family members,
- Opportunities for the concurrent cognitive, affective and physical interactions of all family members will be offered.

Besides, this work will be a guide to study on family groups in the future.

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