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Practices Supporting Family Involvement in Preschool: Family Education through Science Activities

Okul Öncesinde Aile Katılımını Destekleyici Uygulamalar: Fen Etkinlikleri ile Aile Eğitimi

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Abstract

First teachers of children are their parents and parents are responsible for their children's education and personality development. In an efficient and high-quality education, family collaboration is of great importance as well as teaching programs, teaching environment and teachers. This study aims to unite the family with the child in educational life; and it was based on the "science activities practices" as a means, which is described as difficult and boring. In this study, 17 activities prepared by the researcher in parallel with the achievements of the program were presented at certain intervals as "parent-child" activity to the families of 25 students who receive education at a preschool institution affiliated with the Primary Education Department of the Ministry of National Education and Culture of the Turkish Republic of Northern Cyprus and feedback was taken from the parents. The study was conducted in accordance with quantitative research methods and experimental design. The data were collected using Demographic Form, Family Involvement Questionnaire and Student Achievement Form. As a result of the study, it was found out that the practices significantly increased the family involvement and revealed significant differences in children's achievements.

Keywords: science activities, science education, preschool, family involvement, parent

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Öz

Çocukların ilk öğretmenleri anne babalarıdır ve ilk eğitimlerinden ve kişilik gelişimlerinden anne babalar sorumludur. Verimli ve kaliteli bir eğitimde; öğretim programı, öğretim ortamı ve öğretmen kadar, aile işbirliğinin de yeri büyüktür. Bu çalışma, bu görüşler ışığında, aileyi çocuk ile eğitim hayatında birleştirmeyi hedeflemiş; vasıta olarak ise zor ve sıkıcı olarak nitelendirilen "fen etkinlikleri uygulamalarını" esas almıştır. Çalışmada araştırmacı tarafından programın kazanımlarına paralel olarak hazırlanan 17 etkinlik, "ebeveyn-çocuk" etkinliği olarak belirli aralıklarla Kuzey Kıbrıs Türk Cumhuriyeti Milli Eğitim ve Kültür Bakanlığı İlköğretim Dairesine bağlı bir okul öncesi kurumda eğitim gören 25 öğrencinin ailesine sunulmuş ve ebeveynlerden dönüt alınmıştır. Çalışma, deneysel desen ile nicel araştırma yöntemlerine göre yürütülmüştür. Tek grup ön test son test çalışması uygulanan araştırmada veriler; Demografik Form, Aile Katılımı Ölçeği ve Öğrenci Kazanım Formu ile toplanmıştır. Çalışmanın sonucunda, yapılan uygulamaların aile katılımını önemli ölçüde artırdığı ve çocukların kazanımlarında anlamlı farklılıklar ortaya çıkardığı saptanmıştır.

Anahtar sözcükler: fen etkinlikleri, fen eğitimi, okul öncesi, aile katılımı, ebeveyn

Atıf:

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Introduction

The child who attentively follows events, facts and systems around him/her and starts to use them in his/her life develops correct attitudes for the distant future when he/she has useful information about his/her life (Haktanır, 2014). To adapt to the requirements of the modern era of the society, internalizing the concept of the "scientific knowledge", achieving the ways of producing science are essential requirements (Kiraz, Yiğit and Ulu, 2017). Children who have the right attitude developed in the light of scientific knowledge become self-confident individuals who perceive life correctly.

The first institution that ensures that all developmental areas can be maintained in accordance with their age since birth is the family, and the second institution is the school. Efficiency in education can be increased by the coordinated work of these two institutions. Child spends only a certain period of the day at school whereas he/she shares a large part of it with his/her family members. It can be assumed that the family who have this period of time have an important role in supporting the development of their child. It is important that the school and the family share the responsibility for raising qualified individuals needed by society in order to support the child's developmental areas in a positive way and to increase his/her academic success (Özcan and Aydoğan, 2012). Family involvement is a process in which parents and other family members participate in the early childhood education program in order to contribute to the education and development of the children (Morrison, 2003).

Epstein and Sheldon (2006) explained the family involvement through the dynamic interaction between the family and the school which are the closest systems to the child. Family involvement in the education system includes home based involvement. The first home-based category refers to the ways which families meet the most basic needs of children (food, shelter, security, etc.), and the second category refers to the concrete behaviour of parents to create a positive learning environment for their children. This multidimensional system provides a framework that allows experimental measurement and evaluation of family involvement (Fantuzzo, Tighe and Childs, 2000).

Research on children in the field of preschool education reveals that the positive impact on the development of children who are raised in the programs that provide family involvement is permanent. However, in many pre-school education institutions the family stays out of the program, so the skills the child gains are not maintained permanent and it is not possible to transfer these skills to daily life. Therefore, the best approach in pre-school education is not to treat the child as an individual but as a family (MNE, 2006).

An effective family education should have the quality to enhance the communication between the child and the family and to support child development in the right direction. For this reason, family needs should be determined while preparing the curriculum draft. In addition to identifying the needs of the family, the type, content, quality and method selection of the services to be provided to the family is also important. However, a study of need recognition should definitely be conducted in order to achieve the objectives of the services and facilitate the adoption of the program by the family. The day, time, date, subject and rules of the meetings should be determined with the families (Ömeroğlu and Can Yaşar, 2005). Family oriented

educational activities will make adult-child communication entertaining and expand learning opportunities of the child from school to home environment (Mendez, 2010).

Comer (2005) stated that there was an improvement from unwilling behaviour towards enthusiastic participation by families when co-ordinated and systematic efforts to create inclusive school cultures in family education studies were made. As a result of the research they made, Mendez and Fogle (2002) detected that strengthening the connection between school and home social environments through the relationship between parents and teachers could contribute to both the child's social development and academic skills. These two factors that highly affect each other are valuable in terms of quality progression of education.

The child begins to explore the world since birth. That's why they say "a child is a little scientist". Lind (2005), as any scientist knows, states that the best way to learn science is to do science, that is to say it consists processes like asking questions, investigating, collecting data and seeking answers, and that it can be optimized by examining the natural phenomenon that can be examined with young children. Children should have the opportunity to perform their abilities to ask, answer, investigate, and solve problems. The child actively maintains the exploratory process by trying to create new knowledge by using the existing knowledge in his/her every new activity and to restructure his/her knowledge by changing it when necessary (Balat, 2011). In science activities, children should have a sense of curiosity. Natural environmental activities and conditions should be provided to meet the needs of children and the education process should be integrated into nature and the environment (Ulu and Kiraz, 2014). Charlesworth (2015) describes natural learning experiences related to young children as natural, informal or structured. Natural experiences are the experiences in which the child controls the choice and the action; in his/her informal experiences the child chooses the activity and the action, but adults intervene at a specific point. Whereas in structured experiences, the adult chooses the child's experience and directs the child's action a little.

The concept of "the inclusion of families in the education of their children and ensuring more effective involvement", which is accepted all over the world, has a great place in science programs. Family involvement approaches in science education emphasize that in general, family members should be encouraged to find science in their own homes. Children should have an active and enjoyable time with their families in their domestic life outside the school (Veziroğlu, 2011). Science activities are enjoyable activities that strengthen the child bond with the family through the game. The objectives of the science activities can be ordered as curiosity about nature and changes in nature, protection and to take responsibility for nature, observation and active research, to establish cause-effect relationship, to develop tools, to predict and develop problem solving skills, and to produce solutions by using suitable materials or technology for the problems faced by the children (Kiraz and Siddik, 2018). The practice of activities addressing these aims at home with the family will positively support both the family and the child's perspectives towards each other and their surroundings.

This study was based on these ideas. The aim of the study is to develop a science activities themed-practice which is believed to enable parents with children who receive preschool education to participate in the school, to spend a better quality of time with their children and to make a significant contribution to the child's education. The sub-objectives set out in the scope of the study are as follows:

1. Is there a statistically significant difference between the pre-test and the post-test scores of the Family Involvement Questionnaire which was applied to parents who participated in family education through science activities practices?

2. Do the scores which the parents who participated in the education activities got from the Family Involvement Questionnaire vary according to their demographic information?

3. Is there a statistically significant difference between the pre-test and the post-test scores of Student Achievement Form which was applied to measure the academic achievements of five-year-old children who continue pre-school education and whose parents participated in "family education through science activities" practices?

The use of activities in science studies in preschool education is very important in terms of developing children's curiosity and research feelings, stimulating their mental abilities and being successful in school life. The aim of the activities is to enable the child to learn effectively by doing and experiencing science and nature related events. When schools work with families to support children's learning, children tend to be successful not only in school but throughout their lives. Family participation aims to involve families in children's teaching activities and decisions. In the literature research conducted on the subject, it was observed that the studies were conducted on family participation in general and the researches on special areas did not occupy much space in the literature. There are general studies in the literature within the scope of school-family cooperation. However, it is clear that the issue of family participation in science teaching is not adequately studied. In this respect, this study is thought to contribute to the literature as an example of similar studies. In addition, it is thought that such studies may give educators, education managers and programmers an idea to include family participation in science activities in the implementation and curriculum.

Method

Research Design

This study, which was carried out to investigate the effects of Family Education through Science Activities (FETSA) practices which were developed by the researcher on parents' involvement in school and academic achievements of their pre-school students, was carried out with quantitative research method in the scope of experimental studies. The study was conducted with one group of pre-test and post-test designs. Participants were first analyzed with pre-tests in accordance with the application of one group pre-test post-test pattern, and then re-analyzed as post-test after the procedure. The main objective of the experimental design is to test the effect of an experimental procedure (or intervention) on the outcome by controlling all external factors that may have an effect on the result (Creswell, 2014). In this study, the effectiveness of the trainings prepared by the researcher in accordance with the scope of science activities suitable for the parents of pre-school students was tested.

Study Group

The study group of this study consists of 25 children who continue five-year-old group at the preschool education institution which is affiliated to the Ministry of National Education and Culture (MNEC) of the Turkish Republic of Northern Cyprus (TRNC) and the parents of those

children. The sample table related to the parents who participated in the practice is presented below (Table 1).

Table 1. ***The Demographic Pattern of Parents***

	f	%
Gender		
Female	16	64
Male	9	36
Education		
Primary	10	40
Secondary	6	24
High School	5	20
University	4	16
Employment Status		
Employed	13	52
Unemployed	12	48
The Number of Children		
1	3	12
2	12	48
3	8	32
4	2	8
Which Child		
1st	8	32
2nd	10	40
3rd	7	28
4th	-	-
Socioeconomic Status		
Low	3	12
Medium	17	68
Good	5	20
The State of Agreement with the Spouse on Child Education		
Always	12	48
Sometimes	8	32
Rarely	5	20
Total	25	100

Data Collection Tools

Two separate measurement tools were used in the study. The first one is a family-oriented tool and consists of two parts. The first part contains a Personal Information Form which was developed by the researcher and enables the collection of demographic information of the participants. The personal information form consists of seven questions that describe the gender of the parents, educational status, employment status; the number of children, which children is in pre-school education in the family, the socio-economic status and the state of agreement with the spouse on child education.

In the second part of the first measurement tool, the Family Involvement Questionnaire (FIQ) was used to test the effectiveness of family involvement activities. FIQ measures family involvement as involvement based on school, home and school-family cooperation. The reliability coefficient was determined to be .85 in the original practice of the FIQ that was originally developed by Fantuzzo, Tighe and Childs (2000) as 25 items. The adaptation of the

questionnaire to Turkish was made by Gürşimşek in 2003. During the adaptation, the questionnaire was reduced to 21 items; seven in the sub-dimension of school-based involvement, five in the sub-dimension of home-based involvement and nine in the sub-dimension of school-family cooperation-based involvement. The Alpha coefficient of the questionnaire was determined as .87 for the entire questionnaire and .79, .69, .84 for the sub-dimensions respectively. For this study, the Alpha coefficient of the questionnaire was recalculated and determined as .85.

The second of the data collection tools is the Student Achievement Form which was used to measure these parents' children's efficiency in science courses. The form was prepared in accordance with the achievements targeted in the science-nature activities in 2006 Pre-school Education Program which was prepared by Turkish Republic Ministry of National Education (TR MNE) and was in force until 2016 in Northern Cyprus and in 2017 Pre-school Education Program prepared by the Primary Education Department of TRNC MNEC and the achievements that the researcher formed in order to measure the teachings of the activities in education practices that he/she prepared for the parents. The achievement form consisting of 16 items of 5 point Likert scale was applied in its final form by the views of five experts from the fields of Preschool, Turkish Language, Science Education, Environmental Education and Training Programs. Sample items from the achievement form are presented In Table 2.

Experimental Procedure and Process

FETSA practises which were developed by the researcher were applied to the parents in the study group of this study. The practice was implemented in a pre-school institution affiliated to the TRNC MNEC in the Spring Semester of the 2017-2018 academic year. A part of the 17 activities included in the practice content was selected from Şükran Evirgen's book titled "Bugün ne yapıyoruz?" (What are we doing today?) (2011) and another part of activities was created by the researcher (Table 2).

Table 2. ***Activity and Achievement Samples about FETSA***

Achievement Code	Achievement	Activity
A2	He/she tells good/disturbing situations around him/her and explains what should be done.	Toothbrush marketer
A5	He/she can explain freezing, dissolving and evaporating of water by rain, snow and fog.	Freezing-dissolving
A9	He/she imitates the motions and the sounds of the living creatures around him/her	Do you know me?
A12	He/she examines the characteristics of the living creatures and non-living things	Thirsty flowers
A14	He/she explains recycling activities using his/her own words and implements them	A game from my mother a toy from my father

Parents were informed in writing about the practice before starting the training; and pre-tests were sent and collected back within two days. In addition, the researcher completed the first student achievement forms in line with his/her observations. The training lasted for 16 weeks. At the beginning of the first week, parents were invited to the school both for information meetings and exchanging views. In the meeting, information about the developmental characteristics of the children was given, activities performed at home were evaluated, opinions and suggestions were presented. How the family can contribute to educational activities was consulted and the ways to involve the family in education were determined. The sample activity called "Lava lamp" which was selected for the first week was organized as a workshop in the school in company with the teacher. Thus, the parents were given practical training on what direction and how to carry out the home activities with their children. In the following weeks, the families were sent science activities that they could do with their children at home. At the end of six weeks, parents were invited to the school again and exchanged ideas on the effect of the practices. In addition, the second sample activity called "The story of bread" as a second workshop of the educational practices was held in company with mother/father, child and teacher. The exchange of information and views between the teacher and family was continued both at the times of arrival at home and by means of telecommunication tools. Activities consist of titles such as "Does the water smell?", "Freezing-dissolving", "Preparing herbal tea", "I live on an island". Home activities were sent to the house every Friday and every Monday and parents were asked about their verbal or written thoughts about the activity after the practice. After completing 15 home activities apart from two sample activities, the FIQ to the parents in the study group and the Student Achievement Form to the students were applied as a final test. When the training was completed, certificates of achievement and appreciation were given to the families for their participation.

Analysis of the Data

Data collected within the scope of the research were analyzed using SPSS 20.0 program. Before the analysis of the data, it was determined whether the data had normal distribution or not, and it was decided which of the parametric or non-parametric statistical techniques would be used. Since the sample size was less than 50, Shapiro-Wilkis test was used to test the suitability of the data for normal distribution. The data on the variables of the research were shown by frequency and percentage distributions. For the first and third sub-objectives of the study, paired-sample t-test was used on the data with normal distribution to analyze the significance of pre-test and post-test scores obtained from FIQ and Student Achievement Form. An independent groups test for independent samples (t-test and ANOVA) was used to analyze the demographic information mentioned in the second sub-objective of the study.

Results

FIQ Scores of the Parents who Participated in FETSA Practices

The first sub-objective of the study was designed as "Is there a statistically significant difference between the pre-test and the post-test scores of the FIQ which was applied to parents who participated in FETSA practices?". The results of this sub-objective are presented in Table 3.

Table 3. ***Pre-Test and Post-Test Scores of the FIQ***

	N	$\overline{X}$	**SS**	**t**	**df**	**p**	**Explanation**
Pre-test	25	52,48	21,95				
				7,399	24	.000	p<.05
Post-test	25	79,28	12,13				

As a result of the analysis done, it is seen that there was a significant difference in favour of the post-test (p=.000; p<.05). FETSA practices increased the participation of the families. It was possible for families to spend quality time with their children, take care of their children subjectively and take extra care of their children thanks to this training in addition their involvement in this process also increased their awareness about this subject. Thanks to these training practices, families both spent special time with their children and consciously involved themselves in the education of their children. Table 4 shows which sub-dimensions of the FIQ is more significant.

Table 4. ***The Means Belong To the Sub-Dimensions of FIQ***

Sub-dimensions	N	Pre-test $\overline{X}$	SS	Post-test $\overline{X}$	SS
School-based participation	25	14,80	5,29937	24,20	3,73050
Home-based participation	25	16,16	12,45218	20,72	3,39755
School-family cooperation-based Participation	25	21,52	8,24682	34,36	6,49923

As seen in Table 4, the sub-dimension where the parents' participation is the highest is School-Family Cooperation Based Participation (pre-test=21,52; post-test=34,36). The school's cooperation with the family is both educational and supportive for the family. It is thought that the workshops and trainings in the study conducted with families in school increased the scores of this sub-dimension. When the teacher is a guide not only to the students but also to the families, families are supported with both motivating and encouraging and also informative features.

The Distribution of the Scores of the FIQ of the Parents who Participated in FETSA Practices according to Demographic Information

The second sub-objective of the study was designed as “Do the scores which the parents who participated in the education activities got from the FIQ vary according to their demographic information of parents?”. Demographic information of the parents obtained by Personal Information Form were determined as gender, educational status, employment status, number of children, the birth order of the child who is at pre-school at that moment, socio-economic status and the state of agreement with the spouse about child education. The results of this sub-objective are presented in the following tables (Table 5-11).

Table 5. ***Distribution by Gender***

		N	$\overline{X}$	Ss	t	Df	p	Explanation
Pre-test	Mother	17	57,58	23,17	,446	23	,042	p<,05
	Father	8	41,62	15,05				
Post-test	Mother	17	83,29	10,82	,001	23	,017	p<,05
	Father	8	70,75	10,72				

It is seen in Table 5 that there is a significant difference in favour of the mothers according to the gender difference in the distribution of pre-test post-test scores which the participants got from the FIQ (pre-test: p=,042; post-test: p=,017). The mothers' participation scores were higher than those of the fathers' in both pre-tests and post-tests. It is not surprising to meet such a result considering the concept of motherhood. The concept of motherhood consists of the expressions of "more labour, more responsibility, more self-sacrifice, more sentiment, and more sense" when compared to the concept of fatherhood both in the culture we live and in other cultures. It is observed that in the life that becomes globalized and where the gender discrimination is expected to be abolished, the fathers have begun to develop a similar sense of responsibility and feeling for their children like the mothers as the parents have begun to equalize their responsibilities for life. However, these actions are still very new, studies are too few to affect the results, and mothers still receive higher scores compared to fathers in the studies.

Table 6. ***Distribution by Education Status***

		Sum of squares	Df	Mean of squares	f	p	Explanation
Pre-test	Intergroup	2736,940	3	912,313	2,170	,122	p>.05
	Intragroup	8829,300	21	420,443			
	Total	11566,240	24				
Post-test	Intergroup	442,507	3	147,502	1,001	,412	p>.05
	Intragroup	3094,533	21	147,359			
	Total	3537,040	24				

It is seen in Table 6 that there is no significant difference in the distribution of pre-test post- test scores that the parents got from FIQ according to the education status variable. There are primary school and university graduates among the participants. General expectation may be in the direction that education is directly proportionate to participation. However, it is seen in some studies on children that personal development and standard of judgments precede as well as education.

Table 7. ***Distribution by Employment Status***

		N	$\overline{X}$	Ss	T	Df	P	Explanation
Pre-test	Yes	11	48,81	17,20	,060	23	,451	p>.05
	No	14	55,35	25,33				
Post-test	Yes	11	76,54	12,83	,538	23	,336	p>.05
	No	14	81,42	11,58				

It is seen in Table 7 that there is no significant difference in the distribution of the pre-test post-test scores of the participants that they got from the FIQ according to the employment status variable. There is no significant difference between the family involvement of the parents having a profession and the parents who do not work in any profession. The employment status has not been effective for families to spend time with their children by doing activities and accordingly in family involvement. The employed parent and the unemployed parent participated similarly.

Table 8. ***Distribution by the Number of the Children***

		Sum of Squares	Df	Mean of Squares	f	p	Explanation
Pre-test	Intergroup	2340,532	3	780,177	1,776	,183	p>.05
	Intragroup	9225,708	21	439,319			
	Total	11566,240	24				
Post-test	Intergroup	642,957	3	214,319	1,555	,230	p>.05
	Intragroup	2894,083	21	137,813			
	Total	3537,040	24				

It is seen in Table 8 that there is no significant difference in the distribution of pre-test post-test scores of the participants that they got from the FIQ according to the number of children variable. Although there are families with a maximum of four children (8%) in the sample, most of the sample consist families with two children (48%). The fact that participation is not inversely proportional to the number of children indicates that the parents value these educational activities and that they have done their activities regularly even though there are other children at home. This process, which shows that the practices were carried out consistently, highlights the result of the increase in family involvement.

Table 9. ***Distribution by the Birth Order of the Child***

		Sum of Squares	Df	Mean of Squares	f	p	Explanation
Pre-test	Intergroup	988,751	3	494,375	1,028	,374	p>.05
	Intragroup	10577,489	21	480,795			
	Total	11566,240	24				
Post-test	Intergroup	336,765	3	168,383	1,158	,333	p>.05
	Intragroup	3200,275	21	145,467			
	Total	3537,040	24				

It is seen in Table 9 that there is no significant difference in the distribution of the pre-test post-test scores that the participants got from the FIQ according to the variable of the birth

order of the child who was receiving pre-school education during the process. Whether the child was either the first or the last child or in the middle had no effect on the family involvement or on the validity of family education practices through science activities. No matter which child, he/she was given value or importance likewise, activities were done and practices were efficient.

Table 10. ***Distribution by the Socioeconomic Status***

		Sum of Squares	Df	Mean of Squares	f	p	Explanation
Pre-test	Intergroup	1709,299	3	854,649	1,908	,172	p>.05
	Intragroup	9856,941	21	448,043			
	Total	11566,240	24				
Post-test	Intergroup	1063,338	3	531,669	4,728	,020	p<.05
	Intragroup	2473,702	21	112,441			
	Total	3537,040	24				

1: Low, 2: Medium, 3: Good

It is seen in Table 10 that there is no significant difference in the pre-test scores in the distribution of the pre-test post-test scores that the participants got from the FIQ according to the variable of socioeconomic status. However, it was found out that there was a significant difference in the post-test analysis (post-test: p=.020). After the TUKEY test which was done to see between which groups this difference was, it was found out that there was a significant difference between the ones with a low economic income ($\overline{X}$ =62,33) and the ones with middle income ($\overline{X}$ =80,52 ; p=.031) and between the ones with a low income ($\overline{X}$ =62,33) and the ones with a good income ($\overline{X}$ =85,20 ; p=.019). It is seen in the post-test that the level of participation in educational activities of the ones with middle and good socioeconomic status is higher. It is thought that this result is due to the fact that those with middle or good economic status participated in with an easy mind and they motivated themselves in education more because they did not have financial worries.

Table 11. ***Distribution by the Spouse on Child Education***

		Sum of Squares	Df	Mean of Squares	f	p	Explanation
Pre-test	Intergroup	1907,548	3	635,849	1,382	,276	p>.05
	Intragroup	9658,692	21	459,938			
	Total	11566,240	24				
Post-test	Intergroup	1437,242	3	479,081	4,791	,011	p<.05
	Intragroup	2099,798	21	99,990			
	Total	3537,040	24				

4:always, 2:sometimes, 1:rarely

It is seen in Table 11 that there is no significant difference in the distribution of the pre-test scores according to the variable of the state of agreement with the spouse on child education pre-test post-test scores that the participants got from the FIQ. However, it was found out that there was a significant difference in the post-test analysis (post-test: p=.011). Following the TUKEY test which was conducted in order to understand between which groups this difference occurred, it was found out that there was a significant difference between the groups who said always ($\overline{X}$ =84, 07) and the ones who said rarely ($\overline{X}$ =64,00 ; p=.047) and between the groups

who said always ($\overline{X}$ =84,07) and the ones who said sometimes ($\overline{X}$ =61,00 ; p=.029) to the state of agreement. It is seen that the ones who said always in the post-test have higher levels of family involvement in post-education. Parents who were consistent with each other in child education became more efficient and participated more in family education practices through science activities.

The Academic Achievements of Five-Year-Old Children whose Parents Participated in FETSA Practices

The third sub-objective of the study was designed as "Is there a statistically significant difference between the pre-test and post-test scores of the Student Achievement Form which was applied to measure the academic achievements of five-year-old children who continue pre-school education and whose parents participated in FETSA practices?". The findings of this sub-objective are presented in Table 12.

Table 12. ***The Scores of the Student Achievement Form***

		N	$\overline{X}$	**SS**	**t**	**df**	**p**	**Explanation**
Student Achievement Form	Pre-test	25	32,08	7,62	21,268	24	,000	p<.05
	Post-test	25	76,40	8,75				

As a result of the analysis, it is seen in Table 12 that there is a significant difference in favour of the post-test between the pre-test and post-test scores of the Student Achievement Form which was applied to measure the academic achievements of five-year-old children who receive pre-school education and whose parents participated in FETSA practices (p=.000; p<.05). FETSA practices have increased the achievements of the students namely the five-year-old children who continue pre-school education, both in those types of activities and in science in general. Parents' learning by having fun with their children, having a good time with them and the feeling that they gained their children "you are valuable, we care about you" contributed positively to the academic success of the children.

Discussion

The purpose of the research is to investigate the effect of the parents and children activities prepared by the researcher for families and developed for the families to spend quality time at home with their children on parents' school involvement and children's academic achievement.

The pre-test and post-test scores of FIQ applied to parents who participated in FETSA practices in accordance with the first sub-objective of this study were evaluated and a statistically significant difference was found. When the body of literature is examined, it is seen that the related studies on family involvement are not sufficient. However, in a small number of studies it continuously draws attention that the practices developed in the name of family participation resulted in success and provided positive feedback in the "family – child – school" cycle. For example, Erol (2016) developed an environmental education program with family participation in preschool education and implemented three different family education

programs. Evaluating the awareness and attitude criteria, Erol reached the data that family participation brought to successful conclusions as supporting the findings of this study. The most striking result of the study is that family-school based participation sub-step is the one with the highest level of difference. Kurtulmuş, examined the extent of family participation in preschool activities in 2016 and concluded that 61% of family participation activities in mathematics activities were 'partly encouraging the family to spend effective time with their children at home'. Another study addressing the general importance of family participation is the thesis study conducted by Göktaş in 2015. Göktaş stated that family participation activities make a significant difference in the development of children's social skills. Crosnoe and Ansari (2015) found out the school-based participation levels and Şad and Gürbüztürk (2013) found out home-based participation levels as high in their family participation based study which was done to investigate the contribution of migrant families to the success of their children. That also supports the idea that the family trainings prepared are effective and have qualities to enhance family-school cooperation. Another study which adjusts collaterally with the results of this study was conducted by Vural in 2012. In the study, the effect of preschool education on primary education was examined in terms of family participation and various variables. As a result, it was found out that there was a significant difference between the family involvement scores of the parents whose children received pre-school education and whose did not in favour of the parents who participated in pre-school education process. In addition, Koçyiğit's study aimed to get the opinions of teachers, administrators and families about family participation (2015). As a result, according to the participant opinions, among the problems they faced in family participation activities, they mentioned problems such as reluctance, loss of time, fatigue, negative attitude, inability of families to express themselves, apathy and ignorance.

In the light of the findings of the study, there was no significant difference in gender, age, educational status, employment status, the number of children and the birth order of the child when the scores that the parents who participated in the education program got from the FIQ were examined according to the demographic information of the parents. When the body of literature was examined, it was seen that Gürşimşek (2003) and Arabacı and Aksoy (2005) had similar conclusions with similar demographic information in their studies on family participation levels in pre-school education. Despite this, Dinç did not find any significant difference regarding the gender variable in his thesis on family participation in 2017 and stated that participation increased with increasing education level. In addition, Dinç said that the highest level of family participation was civil service. Aksu and Karaçöp (2015) did not find a significant difference in gender variable in their study that examined family participation through home-based science activities conducted for parents of secondary school students, but concluded that family participation differed in variables of income level, education level and occupational groups. Researchers Fantuzzo, Tige and Childs (2000), Kotaman (2008), Uzun and Keleş (2010) concluded that the increase in parent education level had a significant effect on family participation and student success. In this study, it was found out that the level of education did not affect the participation of the family; and it was thought that the result originated from the parents' having trained/developed themselves in order to take care of their children or strengthen their communication with their children. Different working environments like cultural and ethnographic structures can lead to such consequences. Northern Cyprus which is located in the limits of the study is a geography which specifically preserved the qualities of

the well-known “island culture”. In this culture, children take place on the top in value and are located in the centre of the family. Therefore, it can be said that cultural values and lifestyles are more effective than the variables such as gender, age, educational level, profession and the number of children.

There was a significant difference in favour of the families with moderate and good economic status in the economic condition variable which was another variable of the study. Göncü (2000) came to a similar conclusion in his “the place of social and cultural link in children's play” themed research and concluded that the families with moderate and high socioeconomic income levels showed an increase in their tendency to play with their children. Similarly, Dinç (2017) stated that family income level affects family participation, and family participation increases with the increase in monthly income. As supports this result, Şad and Gürbüztürk (2013) concluded in their research based on the parents’ participation level in their children’s education that the increase in the income level of the parents had a significant effect on the participation level of the parents. The restlessness and uneasiness caused by the financial problems faced as a family can cause the brain to be constantly engaged, parents not to care for their children healthily or not to be tuned in such trainings.

In the literature, there was a statistically significant difference in favour of the post-test between the pre-test and post-test scores of Student Achievement Form conducted in order to measure the academic achievements of five-year-old children who receive pre-school education and whose parents attended FETSA practices, which was the third sub-objective of this study. Similar studies conducted in this direction were found. Kaysılı (2008), Biber and Ural (2012) determined positively significant differences in the child's academic skills in parallel with the studies they conducted. Sheldon and Epstein (2005) concluded that the school, the family and the community partnerships’ practices particular to the subject can help educators improve students' math skills and accomplishments. Dinç (2017), in his study conducted with the parents of primary school students, stated that the academic achievement of the students increased with the participation of the family. Similarly, Wilder (2014) found a positive correlation between parent involvement and academic success in parallel with this study as a result of his research called “the effects of parent participation on academic success: a meta-synthesis study”. Likewise, Özcan and Aydoğan (2012) examined the relationship between parents' participation levels and children's academic level of self-esteem and found a positive relationship at a moderate level. Şad also made significant contributions to the literature in terms of increasing academic achievement by family participation (2012). Şad found that the voluntary support of the parents to their children's socio-cultural development and communication with children was an important determinant of students' academic achievement. It is seen that similar studies relating to the subject support the importance and effectiveness of this research. It is an undeniable fact that families have an effective and positive influence on their children's success. Such studies reinforce the idea that family participation in child education is one of the essential solutions which needs to be developed and added to the program.

Conclusion

In this study which searches the effects of FETSA practices developed by the researcher on active participation of families and the academic success of their children in preschool

education, the results obtained for the purposes of the sub-objectives of the study were stated below.

The pre-test and post-test scores that the parents who participated in the training obtained from the FIQ were compared. There was a significant difference in favour of the post-test between the family participation scores before the education program and the family participation scores after the education program.

The state of variability according to the demographic information of the scores that the parents who participated in the training obtained from the FIQ was analyzed. It was found that the education status, the employment status, the number of the children and the birth order of the child in preschool education in the process variables did not affect the participation of the family; the variables of gender, socio-economic status and the state of agreement with the spouse on child education created a significant difference in the participation of the family.

The pre-test and post-test scores that the five-year-old children who were in the pre-school education program and whose parents participated in the training program obtained from the Student Achievement Form developed by the researcher were compared. There was a significant difference in favour of the post-test between the student achievement scores before the training program and the student achievement scores after the training program.

Recommendations were developed in light of the results obtained in parallel with the sub-objectives of the study. It is suggested in the study for the researchers to carry out a similar study with experimental design with control-experimental group in order to test environmental factors, develop educational practices in areas other than science to increase family participation, carry out studies with causal-comparative design by increasing the number of samples or create similar studies in a qualitative-quantitative way by taking the parents' opinions after the needs analysis. According to the results of this study, it is suggested that special topics and activities related to family participation should be added in state and private school curricula, workshops with parents-children participation should be organized, programs which provide parents to be trained by experts on the psychological development, the demands and the needs of the children should be developed.

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Geniş Özet

Giriş

Tüm dünyada kabul gören "ailelerin çocuklarının eğitimine dahil edilmesi ve daha etkin katılımın sağlanması" anlayışı fen programlarında da büyük bir yere sahiptir. Fen eğitiminde aile katılımı yaklaşımları genel olarak aile üyelerinin kendi evlerinde feni bulmaları konusunda cesaretlendirilmesi gerektiğini vurgulamaktadır. Okul dışında kalan ev yaşantısında çocukların aileleriyle aktif ve keyifli vakit geçirmeleri gerekir (Veziroğlu, 2011). Fen etkinlikleri aile ile çocuk bağını oyun aracılığıyla güçlendiren keyifli aktivitelerdir. Etkinliklerin evde aile ile birlikte uygulanması hem ailenin hem de çocuğun birbirlerine ve çevrelerine bakış açılarını olumlu destekleyecektir.

Bu çalışma bu düşüncelerden yola çıkılarak oluşturulmuştur. Çalışmanın amacı okul öncesi eğitime devam eden çocuklara sahip ailelerin okula katılımını artıracak, çocuklarıyla daha kaliteli zaman geçirmelerini sağlayacak ve böylelikle çocuğun eğitimine önemli katkı getirecek fen etkinlikleri temalı bir uygulama geliştirmektir. Çalışma kapsamında belirlenen alt amaçlar şu şekildedir:

1. "Fen etkinlikleri ile aile eğitimi" uygulamalarına katılan anne ya da babalara uygulanan "Aile Katılım Ölçeği" ön test ve son test puanları arasında istatistiksel olarak anlamlı bir fark var mıdır?

2. Eğitim etkinliklerine katılan anne ya da babaların aile katılım ölçeğinden aldıkları puanlar, demografik bilgilerine göre değişkenlik göstermekte midir?

3. Okul öncesi eğitime devam eden ve anne ya da babası "Fen etkinlikleri ile aile eğitimi" uygulamalarına katılan 5 yaş çocuklarının akademik başarılarını ölçmek amacıyla uygulanan "Öğrenci Kazanım Formu" ön test ve son test puanları arasında istatistiksel olarak anlamlı bir fark var mıdır?

Yöntem

Araştırmacı tarafından geliştirilen "Fen Etkinlikleri ile Aile Eğitimi" uygulamalarının ailelerin okul katılımına ve okul öncesi öğrencilerinin akademik başarılarına etkisini incelemek amacıyla yürütülen bu araştırma nicel araştırma yöntemiyle, deneysel türde araştırmalar kapsamında çalışılmıştır. Deneysel desen, ön test son test uygulamalı olarak gerçekleştirilmiştir. Bu çalışmada araştırmacı tarafından okul öncesi öğrencilerinin ailelerine uygun olarak fen etkinlikleri kapsamında hazırlanan eğitimlerin etkililiği denenmiştir.

Araştırmanın çalışma grubu Kuzey Kıbrıs Türk Cumhuriyeti Milli Eğitim ve Kültür Bakanlığına (KKTC MEKB) bağlı okul öncesi eğitimi kurumunda 5 yaş grubuna devam eden 25 çocuk ve bu çocukların ebeveynlerinden oluşmaktadır. Çalışmada iki ayrı ölçme aracı kullanılmıştır. İlki, ailelere yönelik hazırlanan araçtır ve iki kısımdan oluşmaktadır. Birinci kısımda araştırmacı tarafından geliştirilen ve katılımcılara ait demografik bilgilerin elde edilmesini sağlayan Kişisel Bilgi Formu yer almaktadır. İlk ölçme aracının ikinci kısmında ise aile katılım etkinliklerinin etkililiğini test etmek amacıyla Aile Katılım Ölçeği (AKÖ) kullanılmıştır. AKÖ, aile katılımını okul, ev ve okul-aile işbirliği temelli katılım olarak ölçmektedir. Veri toplama araçlarından ikincisi bu ebevenlerin çocuklarının fen derslerindeki yeterliliklerini ölçmek amacıyla uygulanan Öğrenci Kazanım Formudur.

Uygulama, 2017-2018 Eğitim Öğretim yılının Bahar Döneminde KKTC MEKB'ye bağlı bir okul öncesi kurumunda uygulanmıştır. Uygulama içeriğinde yer alan 17 etkinliğin bir kısmı Şükran Evirgen'in "Bugün Ne Yapıyoruz" (2011) adlı kitabından seçilmiş, bir kısmı ise araştırmacı tarafından bizzat oluşturulmuştur. Araştırma kapsamında toplanan veriler SPSS 20.0 programı kullanılarak analiz edilmiştir. Araştırmanın değişkenlerine ait veriler frekans, yüzde dağılımları, eşleştirilmiş grup testi ve bağımsız gruplar testi ile gösterilmiştir.

Bulgular ve Sonuç

Araştırmacı tarafından geliştirilen "Fen Etkinlikleri ile Aile Eğitimi" uygulamalarının ailelerin aktif katılımlarına ve okul öncesi eğitime devam eden çocuklarının akademik başarılarına etkisini araştıran bu çalışmada, çalışmanın alt amaçları doğrultusunda elde edilen sonuçlar aşağıda belirtilmiştir.

Eğitime katılan anne ya da babaların AKÖ'den aldıkları ön test ve son test puanları karşılaştırılmıştır. Eğitim programı öncesinde bulunan aile katılım puanları ile eğitim programı sonrasında bulunan aile katılım puanları arasında son test lehine anlamlı bir fark çıkmıştır.

Eğitime katılan anne ya da babaların AKÖ'den aldıkları puanların demografik bilgilere göre değişkenlik gösterme durumları incelenmiştir. Çalışmada eğitim durumu, çalışma durumu, çocuk sayısı ve süreçte okul öncesi eğitim alan çocuğun doğum sırası değişkenlerinin aile katılımını etkilemediği; cinsiyet, sosyo-ekonomik durum ve çocuk eğitimine dair eş ile anlaşma durumu değişkenlerinin ise aile katılımnda manidar fark yarattığı bulunmuştur.

Anne ya da babası eğitimi programına katılan ve okul öncesi eğitim alan 5 yaş çocuklarının araştırmacı tarafından geliştirilen "Öğrenci Kazanım Formu"ndan aldıkları ön test ve son test puanları karşılaştırmıştır. Eğitim programı öncesinde bulunan öğrenci kazanım puanları ile eğitim programı sonrasında bulunan öğrenci kazanım puanları arasında son test lehine anlamlı bir fark çıkmıştır.

Tartışma

Fen etkinlikleriyle aile eğitimi uygulamalarına katılan anne ya da babalara uygulanan "aile katılım ölçeği" ön test ve son test puanları değerlendirilmiş ve istatistiksel olarak anlamlı bir fark bulunmuştur. Alan yazın incelendiğinde, aiel katılımları ile ilgili çalışmaların yeterli derecede olmadığı görülmektedir. Buna karşın, yapılan az sayıda çalışmada aile katılımı adına geliştirilen uygulamaların başarı ile sonuçlandığı ve "aile-çocuk-okul" döngüsünde olumlu dönütler sağladığı devamlı göze çarpmaktadır. Söz gelimi, Erol (2016) okul öncesi eğitim alanında aile katılımlı çevre eğitim programı geliştirmiş ve üç farklı aile eğitim programı uygulamıştır. Farkındalık ve tutum kriterlerini değerlendiren Erol, aile katılımının yapılan bu çalışmanın bulugularını da destekler nitelikte olumlu sonuçlar doğurduğu verilerine ulaşmıştır.

Çalışmanın en çarpıcı sonucu aile-okul temelli katılım alt basamağının en yüksek anlamlı farklılığa sahip basamak olmasıdır. Crosnoea ve Ansari (2015) göçmen ailelerin çocuklarının başarılarına katkılarını araştırmak amacıyla yaptığı aile katılımı temalı çalışmasında okul temelli katılım düzeyini; Şad ve Gürbüztürk (2013) ise ev temelli katılım düzeylerini yüksek bulmuşlardır. Bu da hazırlanan aile eğitimlerinin etkili ve aile-okul işbirliğini arttırıcı niteliklere sahip olduğu öngörüsünü destekler niteliktedir. Bu çalışmanın sonuçları ile paralel uyum gösteren bir diğer çalışma Vural tarafından 2012 yılında yapılmıştır.

Çalışmada okul öncesi eğitimin ilköğretime etkisi aile katılımı ve çeşitli değişkenler açısından incelenmiştir. Sonuçta, çocuğu okul öncesi eğitim alan velilerin aile katılım puanları ile çocuğu okul öncesi eğitim almayan velilerin aile katılım puanları arasında okul öncesi eğitim sürecine katılan velilerin lehine anlamlı fark olduğu bulmuştur.

Çalışmanın alt amaçları doğrultusunda elde edilen neticeler ışığında öneriler geliştirilmiştir. Çalışmada araştırmacılara yönelik olarak, benzer bir çalışmanın çevresel faktörlerin de test edilmesi amacıyla kontrol-deney gruplu deneysel desen ile yürütülmesi, aile katılımının arttırılması için fen dışındaki alanlarda da eğitim uygulamaları geliştirilmesi, örneklem sayısının daha geniş tutularak nedensel karşılaştırma deseni ile çalışmalar yapılması ya da benzer çalışmaların ihtiyaç analizi sonrasında ebeveyn görüşleri de alınarak, nitel-nicel karma şekilde oluşturulması önerilmektedir. Bu çalışmada ortaya çıkan sonuçlara istinaden devlet ve özel okul müfredatlarına aile katılımları ile ilgili özel konuların ve etkinliklerin eklenmesi, anne, baba, çocuk katılımlı çalıştayların düzenlenmesi, ailelerin çocukların psikolojik gelişimleri, istek ve ihtiyaçları konusunda uzmanlar tarafından eğitilmesini sağlayan programların geliştirilmesi önerilmektedir.