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RESEARCH ARTICLE

Forest School Applications in Pre-school Period: A Case Study*

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Abstract

The current study was conducted to investigate the contribution of the forest school approach to the development of preschool children. In this connection, the study group is comprised of 7 pre-schoolers aged at 48-60 months. The sample of the current study was determined by using the convenience sampling method, one of the purposive sampling methods. The current study is a case study, covering an eight-week period. A total of five data collection tools were used in the study: "General Information Form", "Pre-Application Questions", "Activity Evaluation Form (Individual)", "Activity Evaluation Form (General)", "Development Observation Form". The collected data were transcribed; codes and themes were established and finally content analysis was conducted on them. As a result of the analysis, it was concluded that the forest school applications positively affected the children's cognitive development, language development, social and emotional development, motor development and self-care skills in some situations and supported the development of the children in general. In light of these findings, integration of forest school into pre-school education is thought to be of great importance.

Keywords: Forest school, child development, case study, pre-school period.

Introduction

While educational approaches from past to present have shifted from teacher-centred educational models to student-centred models, educational environments that could comply with and deal with these changes have not been established in many countries. Even if the education programs are changing, if the educational environments we offer to children do not change, the targeted change in education will not be fully accomplished (Aktaş-Arnas and Ördek-İnceoğlu, 2019). While talking about the educational environment, most people think of classrooms. However, the educational environment is not just limited to the classroom; rather all environments where children are exposed to a learning-teaching process and can interact with others can be called educational environments (Kıldan, 2007). Therefore, it would not be realistic to expect only learning environments limited to the classroom, books and educational programs to be sufficient to inform students, to develop their life skills, and to develop them in many respects such as interest in and attitudes towards science (Şen, 2019).

In this context, the following statement found in the 2023 Education Vision ''More effective use of out-of-school environments such as natural, historical and cultural settings and science-arts centres and museums to support the accomplishment of the objectives set in the curriculums will be ensured." indicates the importance of the steps

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to be taken for more effective exploitation of out-of-class educational activities (2023 Education Vision, 2018). On the other hand, within the context of the "New Teacher Training Undergraduate Programs" updated by the Council of Higher Education (CHE) in 2018, elective courses such as ''Museum Education" and "Out-of-school Learning Environments" were integrated into curriculums (CHE, 2018). These attempts show that out-of-class education activities are considered important and studies are carried out in this direction. Considering the preschool period, educational environments offered to children should be planned in connection with the adopted educational philosophy (Balcı, 2014). The preschool period is defined as the process in which all development areas of children; either motor, social or cognitive, are shaped. In this period, adult support and education opportunities are of critical importance for the best preparation of the child for life (Oktay, 1999). In the preschool education process in which variables such as teacher, family, curriculum are effective, experiences that will enable children to interact with rich stimuli are considered to be important (Ramazan and Demir, 2011). For these reasons, there is a need for educational environments that are designed in accordance with the development of children and that can offer children a variety of experiences, opportunities and possibilities (Çelik, 2012; Güleş and Erişen, 2013).

Today, most of the schools in urban areas do not have natural playgrounds and woodlands (Başal, 2015). Accordingly, out-of-class activities are not given enough attention and are not included in educational activities. In recent years, the approaches called out-of-school education, out-of-class education, informal education, and outdoor education, which suggest that knowledge should be acquired in contact with the outside world, have come to the fore (Karadoğan, 2016). One of these alternative approaches is the forest school education model. Forest school applications allow individuals to gain experience and grow in a self-confident and independent way by putting the greatest emphasis on free play, movement and outdoor activities in the natural environment (Maynard, 2007; Blackwell, 2005).

Built on the principles of creative and robust learning, forest schools aim to educate both adults and children for a more sustainable future, while also improving their academic performance (Blackwell, 2015a). Through free play and experiential learning involved in forest school applications, children gain information about the natural environment, they work in cooperation and take responsibility for solving the problem situations they encounter (Blackwell and Nawaz, 2014; Taylor and Kuo, 2009). Therefore, forest schools are defined as environments that enable inquiry-based and game-based learning (MacEachren, 2013).

Different studies have been carried out in many countries on the forest school learning approach, which has started to spread rapidly in the world and is regarded as one of the important learning approaches today. Roe, Aspinall, and Thompson (2009) researched the health benefits of forest schools. Their study showed that forest schools help children balance their anger. Similarly, Blackwell (2015b) stated that forest school programs have a positive effect on children and that children develop a stronger sense of endurance, safety and well-being in these environments. On the other hand, Close (2012) approached from a different perspective and examined children' perceptions of forest school applications. As a result of the study, it was found that children developed a respect-based attitude towards nature and environment, and that they started to show more interest in nature. Recently, a study has been carried out by Kahriman-Pamuk and Ahi (2019) in order to understand the experiences of children who have received pre-school education in the forest school in relation to the understanding of school. On the basis of the findings obtained from the children's drawings and responses given to the question "What is school?", it was observed that the children associated the concept of school with biotic factors (tree, flower, grass and animals) and abiotic factors (cloud and sun). In addition, they depicted natural phenomena such as rain, wind and rainbow and

depicted tents and sand pits instead of closed places as elements of the artificial environment. When the effects of forest school on children were examined, it was also revealed that forest school supports the development of peer relationships, involves nature-child relationship in the daily experiences of children and the sense of discovery is continuously fostered.

When the existing literature is reviewed, it is seen that forest schools have many positive contributions to children. In this literature, there are studies investigating the effects of forest schools on children' creativity and imagination (Mckinnell, 2015; Kiewra and Veselack, 2016), on children's health (Roe, Aspinall, and Thompson, 2009), children's endurance, confidence and well-being (Blackwell, 2015a), children's and their parents' perceptions (Close, 2012) and their effects on children (Borradaile, 2006; Slade, Lowery and Bland, 2013; Massey, 2013; Nawaz and Blackwell, 2014; Maynard, 2017).

There is also some research focusing on the contributions of forest school to the development of children. Borradaile (2006) determined that children between the ages of 4 and 7 attending forest school have made social and emotional progress, in particular. It has also been reported that forest school applications positively affect children's creativity and entrepreneurship. In the study conducted by Slade, Lowery, and Bland (2013), the mixed school age groups' forest school activities were examined and it was observed that the physical endurance and motor skills of the children improved.

O'Brien and Murray (2007) investigated the impact of forest schools on children's development. In this forest school research, it was concluded that in the short term, the children's language use improved, the children behaved more independently, their awareness of their own and others' personal space increased, and their fine and gross motor controls improved. In the medium term results, it was found that the children increased their self-esteem, had no difficulty in establishing relationships with their peers and adults, their memory, physical development, language use were fostered, they felt more valuable, and their families became more interested in forest schools due to the excitement of their children. In the long-term results, it was found that the children's physical endurance improved, they were engaged in the activities more comfortably in a pressure-free forest environment, their creativity improved, and they were able to use good and difficult motor skills outside the forest school.

Overall, although forest school applications were found to have physical, spiritual, cognitive, and social benefits, studies examining these areas of development holistically are not common. In the current study, all developmental areas will be examined holistically and thus it is believed to make an important contribution to the literature. The fact that no study examining the effects of forest school on the development of pre-schoolers has been found in Turkey makes this study important.

Answers to the following questions were sought in the current study:

- What is the effect of forest school applications used in pre-school education on the development of pre-schoolers?
- What is the contribution of forest school applications to the cognitive development of pre-schoolers?
- What is the contribution of forest school applications to the motor development of pre-schoolers?
- What is the contribution of forest school applications to the self-care skills of pre-schoolers?
- What is the contribution of forest school applications to the social-emotional development of pre-schoolers?
- What is the contribution of forest school applications to the language development of pre-schoolers?

Methodology

The current study employed the quantitative research model. Quantitative research aims to investigate perceptions or events in their natural environments as they are in a holistic and realistic manner by using data collection tools such as observation, interview and document analysis (Yıldırım and Şimşek, 2016). In the current study, the case study design, one of the qualitative research models, was used. Case study involves the detailed investigation of one or more cases (Yıldırım and Şimşek, 2016). As the contribution of forest schools to the development of children would be examined, it was thought that it would be necessary to collect detailed data in a specific time period. As the effects of the applications on the children occurred along a process and emerged gradually, all the processes were needed to be analyzed in an integrated manner. For these reasons, the case study model which allows collecting detailed data was used to collect detailed data and to facilitate the analysis. In the current study, forest schools were taken as the case to be investigated and their contribution to the development of children was examined. To this end, woodland in the garden of a state kindergarten was used as the application area. This area was preferred because it complies with the definition of the woodland proposed for the implementation of forest school applications. The applications were carried out by creating a half-day training program with children for seven weeks in the woodland.

Study Group

In the current study, purposive sampling was selected as it allows the in-depth analysis of the cases thought to include rich data. One of the purposive sampling methods, the convenience case sampling brings speed and practicality to research by allowing working with participants easily available (Yıldırım and Şimşek, 2016).

The study group of the current research is comprised of 7 children aged at 48-60 months and attending a state pre-school institution located in a village in the East Anatolian region of Turkey in the 2017-2018 school year. Of the participating children, 5 are girls and 2 are boys. The majority of the mothers of the children are in the age group of 28 years old and under. The great majority of the mothers are illiterate while the great majority of the fathers are literate and elementary school graduates. While all of the mothers do not work, the fathers have some kind of job to do. When how long the children had been attending the pre-school institution was examined, it was found that nearly half of them had been attending for 0-6 months while the other half of them had been attending for 13-18 months.

Data Collection Process

As the data collection tool in the current study, a general information form, a semi-structured interview form and a semi-structured observation form were used. The required permissions were taken from the school administration before starting the data collection and administration process. Before starting the application, the families were contacted and informed about the purpose of the current study. Boots, fleece and raincoats were provided by the researcher so that children would not be affected by the cold weather. Then, the data collection process and applications of the activities started.

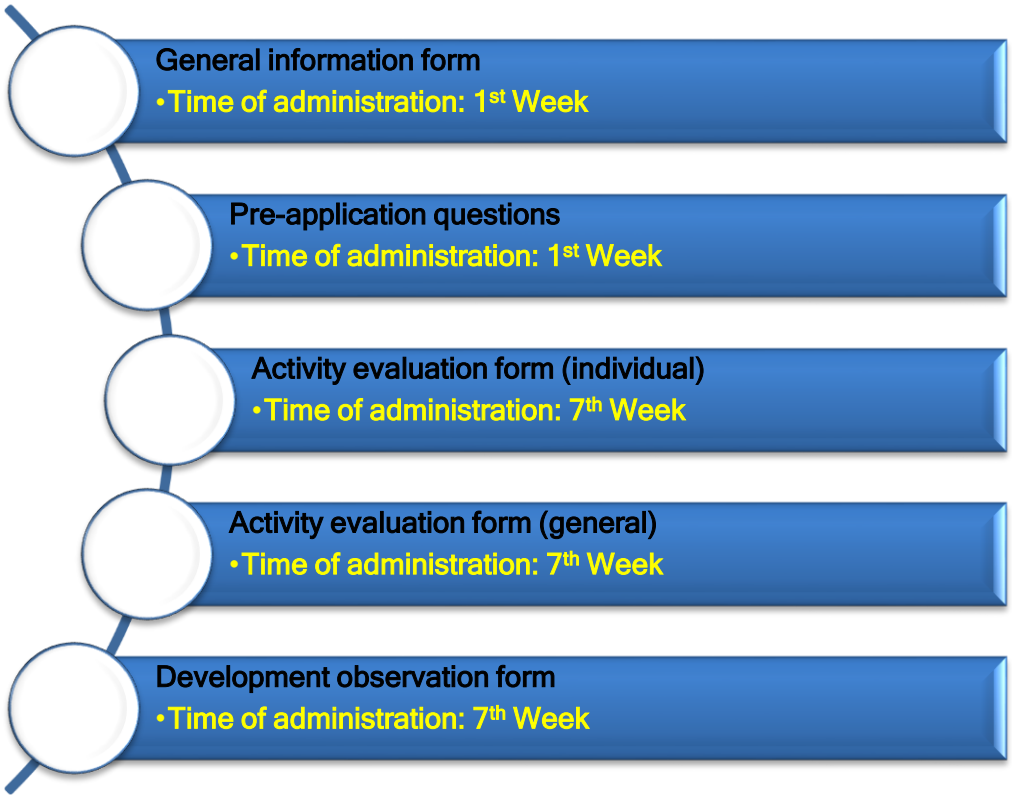

Figure 1. Data collection schedule

In Figure 1, the data collection process is outlined. In the first week of the study, the general information form was prepared by the researcher to collect data about the children and their families. In the general information form, there are items to elicit data about gender, the mother's age, the father's age, the mother's education level, the father's education level, the mother's occupational status, the father's occupational status and how long the child has been attending the pre-school institution. The general information forms were filled by the researcher on the basis of the information given in the children's personal development files.

In the first week of the study; besides the data collected with the general information form, interviews were conducted with the children by using four questions developed by the researcher before staring the application. In the development process of these questions, expert review was also used. By using these questions, it was aimed to elicit the children's perceptions of forest and they were encouraged to ponder and also to determine how they observe their environment.

On the basis of the forms used by O'Brien and Murray (2007), a four-item activity evaluation form (individual) was developed. With this form, it was indicated what kind of development was expected as a result of conducting activities, discussions were conducted about whether the objectives were accomplished and general inferences were made. With these forms, data were collected for each child every week.

In the current study, another activity evaluation form (general) prepared under the guidance of the "Institute of I am Learning in Nature" from which consultancy was received by the researcher and including the items "pre-preparation", "precaution", "what will you do", "where", "when", "how, "why" to be asked to the children before the activity

and “evaluation of the out-of-class activity” after the activity was used. With this form, pre-preparation for the activities planned to be implemented for seven weeks was performed and the expert opinions were sought on the activities. On the basis of the feedbacks taken from the experts, some changes were made and then the form was administered.

The development observation form used in the current study was developed by adapting the form used by O’Brien and Murray (2007) into Turkish. The form was adapted under expert guidance by considering the objectives and specifications of the development areas defined by the Ministry of National Education (2013). This form including the following areas of development: ‘‘Self-esteem and Confidence”, “Social Skills and Emotional Development”, “Language and Communication”, “Motivation and Concentration”, “Physical Skills” and Self-care Skills” was administered to each child every week after the completion of the activities.

Application Process

In the current study, a total of seven activities were prepared, one for each week and they were started to be implemented from the second week on. In Figure 2, these activities are shown. In the second week, activities requiring the children to explore their environment and to make observations were conducted. In the third week, a fire burning and balance walking activity was implemented to help children see how they should light a fire when they are in nature. In the fourth week, a bird's nesting event was held in order for children to respect the lives of living creatures in nature and to establish a positive bond with them. In the fifth week, various activities were organized with rope to develop children’s gross motor skills and to encourage them to take risks. Since the children were asked to take responsibility in lighting a fire previously, the fire was lit with the help of the children, and storytelling activity was carried out in front of the fire in the sixth week. In the seventh week, bread dough was prepared together with the children and bread was baked outdoors. In this week, the security measures to be taken were discussed for the children to adopt the rules. In the eighth week, the children were asked to create a living creature that is not found in nature and make a home for it by using natural objects made of clay. Thus, it was aimed for the children both to discover the environment they were in and to use their creativity. In all the weeks, a quarter of the time spent outside was allocated to the activities, and in the remaining time, the children were given time for free activities.

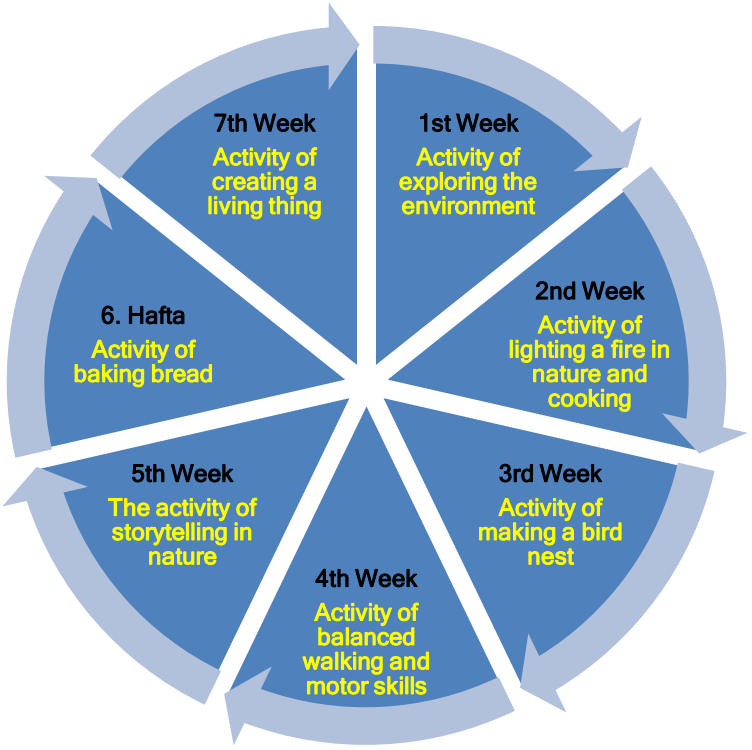

Figure 2. The activity application process

Data Analysis

The current study employed content analysis, one of the qualitative data analysis methods. Content analysis is used to define data and to uncover the relevant facts hidden inside the data (Yıldırım and Şimşek, 2016). In line with this analysis method, first such codes as C1, C2, C3 ..... were given to the participating children to keep their identities confidential. The data obtained from the interviews conducted with the children and the data collected from the teacher observations were transcribed. These transcriptions were read several times and a great care was taken to avoid any loss of data.

Frequently repeated words or observed events were determined as codes. After the codes were created, another researcher was asked to analyze the data of this study. The codes found in the two analyzes showed a high degree of similarity (95%). The different codes obtained were discussed and tried to reach an agreement on them and the codes on which no agreement could be reached were not included in the study. The themes created on the basis of the codes are shown in Figure 3.

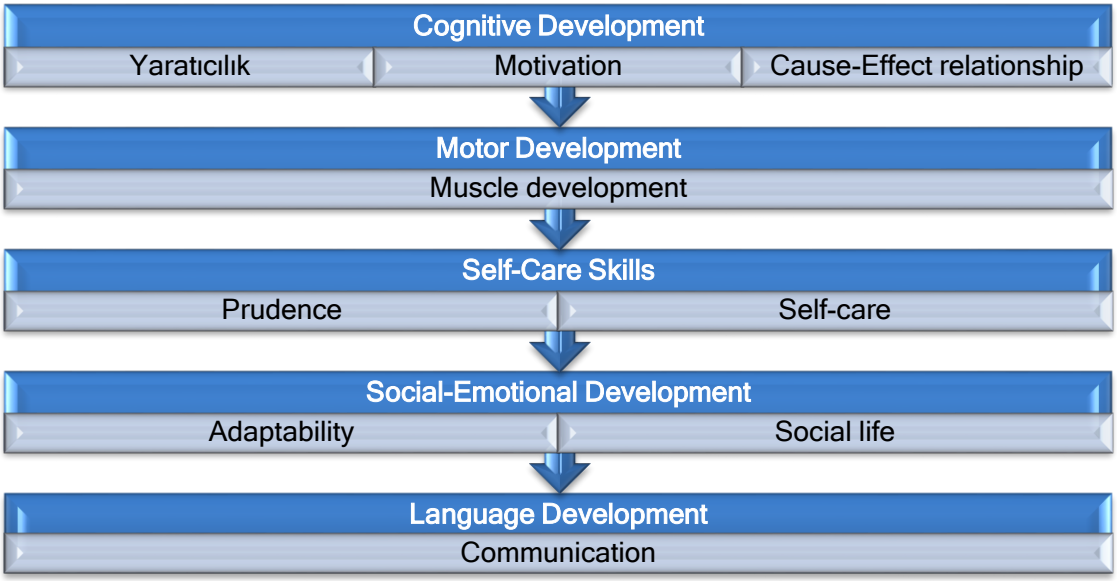

Figure 3. Created Themes

In order for the study to be reliable and valid, various concepts that reflect the nature of qualitative studies were tried to be checked. The first of these concepts is the credibility of the study (Lincoln and Guba, 1985). In this context, firstly, an area suitable for the forest school criteria was determined. An environment where children could move freely, which was rich in natural objects and which would activate children's creativity was created. Necessary precautions were taken and necessary materials were obtained in order to prevent the possibility that the data to be collected might not reflect reality because of the effects of cold weather conditions on the children. In addition, expert opinions were sought at every stage of the observation forms developed to collect data. In line with the feedback provided, the observation forms were created by making necessary corrections and additions. Finally, many data collection tools were used in the current study. Comparing the findings obtained with the videos and photos, it was checked whether they confirmed each other.

Another concept is transferability (Yıldırım and Şimşek, 2011). In this connection, the study sample, its environment and the general characteristics of its processes were defined in such detail that they could be compared with other studies to be conducted. The concept of consistency was considered to contribute to the establishment of the reliability of the qualitative data (Lincoln and Guba, 1985). The data obtained were shared with the expert and the expert was asked to analyze them. When they were compared to the codes created by the researcher, it was seen that they were largely similar (95%). Different codes were also discussed and tried to be eliminated. The codes on which no agreement was reached were not included in the study. Finally, confirmability is an important concept that should be taken into consideration in qualitative studies (Yıldırım and Şimşek, 2011). In order to confirm the findings of the current study, the findings were supported by children's answers and observation notes.

Findings

In this section, findings obtained for the sub-problems in relation to the problem statement are given.

Findings related to the First Sub-problem

What is the contribution of forest school applications to the cognitive development of pre-schoolers?

Creativity

It was observed that the forest school applications had impacts on the creativity of the children through the observations and discoveries the children made, the games they played and the richness of the environment in terms of materials during the activities. The children explored their environment in the forest school application area, gained knowledge about the events and situations and made inferences. While exploring the environment with a magnifier, C1 said "*Teacher, I have found a mushroom. This is a big and white mushroom. Can it be poisonous?"*, it was also observed that children found flowers in different colours and that they wanted to examine them. It was also determined that the children established connections between the events they saw in the environment and the situations they encountered in the class by means of their explorations and observations. By making the following explanation *"Ants have nested here. They must be looking for food because the winter is over. It was so in the story we read.",* C3 created a link between the real event he/she witnessed in the environment and the book "Ant Şipi" read in the class.

Through such explorations and discoveries, they had the opportunity to encounter living things and objects that they had not seen, heard, or contacted before, and this was observed to have indirectly improved children's creativity. This is also supported by the qualitative data obtained from the interview forms and teacher observations.

Since the environment where the applications were carried out was natural and unstructured, the children created materials from wood chips and leaves. In this process of materials creation, they used their creativity. While creating these materials, they tried to use them by adding new meanings to the objects they use in their daily lives or by adapting that material according to what they had at their disposal. When they were asked to create a creature that is not found in nature from clay within the application conducted in the seventh week, one of the participating children, C5 said the following about the living thing he/she created ''*I made a turtle. A turtle with spines on its back."* C3 described the living thing he/she created as follows; "*I made a snake with ears. It has wings; it can fly."*

Motivation

Mobility and vitality resulting from the dynamic nature of the forest school are thought to have positively affected the children's motivation. It was observed that children were more motivated for the tasks given in the natural environment and the games they played. In the activity in which the children were asked to create a living thing and a nest for it, C4 said "*I will collect leaves and come to you. First, I need to collect leaves to cover the nest",* indicating how much motivated he/she was for the given task and how much determined to complete the task.

As the forest school applications were carried out in the open area, the children constantly interacted with a different creature or object. It was observed that this kept the children's interest and excitement alive. While playing in the environment, C3

expressed his/her interest and excitement as follows; *"My teacher, a leaf has just fallen down from the tree. Some part of the leaf is green and some part is brown."* While observing the environment, C5 expressed his/her interest in and excitement about a new object as follows; "*Look! There is a flower here. It was not here last week."*

This environment kept the minds of the children constantly alive and made them react at any time. In this way, the children allocated more time to discoveries and observations. In another event in which this was observed, with his/her willingness to engage in an activity, C2 showed the effect of forest school activities on the children by stating "*The ladder activity we did the other day was very nice. Can we do that again? I won't fall down this time."*

Establishing cause-effect relationhsip

Due to its dynamic nature, the forest school environment kept the curiosity of the children alive and by means of learning by experiencing, the children established cause-effect relationships in the activities they did. They learned about the causes and effects by directly experiencing natural events such as yellowing of leaves, drying of tree branches, emergence of flowers, greening of grass, blooming trees and rainfall. By making the following comment during the activity of making a bird nest; *"When winter comes, trees shed their leaves. Birds are starving. We need to feed them."*, C4 established cause-effect relationships about natural events and living things. Moreover, by stating *"Look! The weather is cloudy today. It may rain.",* C1 gave an example of cause-effect relationships created by the children as a result of being involved in the forest school activities. Before the fire setting activity, C7 established a cause-effect relationship by saying "*As it is raining, woods are wet, I cannot light a fire with them*."

Findings related to the Second Sub-problem

What is the contribution of forest school applications to the motor development of pre-schoolers?

Muscle Development

It was observed that the games played by the children within the forest school applications and the tools and equipment they used had a positive effect on their muscle development. The children carried the objects they would play with in the forest school application area and the necessary materials in the place they would create from one place to another. This affected both small muscle development and large muscle development. While playing in the sand, C7 wanted help from his/her peers by saying "*Please, bring me some sand. I will cover the roof of the house.";* thus, indirectly contributed to their muscle development. While preparing for the activity of fire setting, C4 said "*I need to collect some stones. I will put them around the area where we will light a fire.",* indicating that he/she both learned to take some measures for a forest school activity and performed some activities conducive to his/her muscle development. This activity positively affected their small muscle development as they carried objects in their hands and their large muscle development as they ran, hopped and jumped while carrying the objects.

Children actively used garden tools such as pickaxes, shovels and rakes and magnifying glass in forest school applications. These tools were effective in both their motor development and in their understanding the safety precautions they should take while using these tools. While playing with pickaxes and shovels, C2 used tools for muscle development and warned his/her peers about the use of tools by saying "*Let's make a deep hole with the pickaxe, but watch out when digging for it not to harm our eyes. I will hide treasure in it."* Although the children had difficulty using the tools in the first weeks,

these skills developed later. The use of these tools was effective in the children's observing the creatures underground and making discoveries.

The forest school application area consisted of an environment where children could move freely. In this way, the children performed many movements such as running, jumping, swinging and climbing trees. While climbing trees, C7 stated "*I can easily climb that tree because it has places like stairs*." Since activities such as walking on the rope, crawling and walking on the ladder were included in the activities, the children were in motion and active every week. These movements and activities were effective in the progress of children's motor development.

Findings related to the Third Sub-problem

What is the contribution of forest school applications to the self-care skills of pre-schoolers?

Prudence

As forest school applications were carried out in an unstructured environment by doing and experiencing, new situations developed in the environment and various risk factors emerged. As a result of the rules and principles that the children learned over time, they started to find solutions to these risky situations. This was called prudence. Risky situations were explained to the children by the researcher before the forest school applications and they were also explained what they should be careful about. However, due to the dynamic nature of the forest school, different situations emerged in the process, and the children took responsibility and developed solutions to these risky situations. C3 made the following warning while going past thorny plants; ''*Look! There are a lot of thorns. If we are not careful, we can bleed badly."* On the other hand, while walking on the ladder, C2 made the following explanation; "*The place where the ladder is located is high. We should walk carefully."* While discovering the environment with a magnifier, C6 warned *"Do not touch the mushroom! It can be poisonous."*

Facing risks also affected the children's ability to take leadership, to produce and implement solutions. C1 tried to undertake the leadership during free play by saying ''*I will first climb up the tree. If you follow me, you won't fall down.* While playing with the pickaxe-shovel'', C6 drew attention to the rules to be obeyed during the activities by stating "*You need to be careful while using the pickaxe, it nearly touched on my head!"*

It was observed that the children paid more attention to organizing, protecting and storing their belongings in the natural environment. It was observed that the children determined their own private area to keep their belongings there because of the length of the grass and thick shrubs in some places in the environment. C3 determined a private area for himself/herself and said *"My belongings are under the tree. I put a stone next to them not to be confused and not to mix them up with others."*

This was also observed for the items and environments collectively used by the children. After the completion of the activity, C7 pointed to the necessity of leaving the environment they are in clean by saying *"If we don't leave here clean today, it will be dirty when we come next time."* During their stay in nature, they took care to respect nature and restore it to the old state when leaving. C1 expressed his/her respect to nature and living things by saying "*I have found a flower but I haven't picked it up because it is a living thing."*

Self-care

In the forest school applications aiming to ensure the development of the children by taking individual responsibility, every week the children were dressed in their own

clothes (boots, raincoats) and they were taught to take care of their personal cleanliness and that of the environment. With the boots, raincoats, overalls and fleece provided against cold weather conditions, the children's self-care skills improved and they acquired the habit of putting on and taking off their clothes on their own. In this connection, C4 said *"Now I can dress up on my own."* Facilitating intervention was made when the children had difficulties but they were expected to reach the result by themselves. In such a case, C2 said *"Teacher, please, you help the other children, I can put it on by myself."*

This situation was also observed while the children were putting on their daily clothes and shoes. It was determined that the children could transfer the skills and knowledge they learned during the activities to daily life. This is also supported by the data obtained from the interview forms and the teacher observations. When he/she came to the school in the morning, C6 said "*My teacher, I got dressed on my own at home this morning. My mother did not help me. I will do the same thing here while going out."*

Since time was spent in nature during the forest school applications, cleaning was given importance. The children met their toilet needs in a toilet close to the area and they were explained why they should pay attention to cleaning. At first, they were hesitant about playing with mud; they tried not to get their clothes dirty. C5 explained his/her concern about playing with mud as follows; "*My teacher, my hands have become muddy but if I wash them, they will be clean, won't they*?"

When they were explained that their clothes would be cleaned even if their clothes were dirty, the children became more willing to play with mud. While playing with mud, C1 said "*Even if our clothes get dirty, our teacher washes, let's roll over here."* They paid attention not only to personal cleaning but also to the cleaning of the items they used. Care was taken not to leave the items muddy. In this regard, C7 said "*Let's get some water and wash the shovel; it is dirty."*

Findings related to the Fourth Sub-problem

What is the contribution of forest school applications to the social-emotional development of pre-schoolers?

Adaptability

Although most of the forest school activities were planned individually, the challenging and difficult conditions of natural life (such as walking up, climbing, digging, carrying, rolling) led children to act as a team. During a game they played by using wood blocks, C2 said *"Friends, let's carry the wood blocks down?"* During a game they improvised during their free time, C5 said *"Let's dig together and take some sand. There will be a bigger pit then."* This paved the way for strengthening the emotional bond between children, improving communication skills and forming team spirit. When C1 had difficulty in climbing down the tree he/she was in, he/she wanted help from his/her friends; *"My friends, can you help me climb down the tree?"*

While the children were going to the forest school application area, they opened the door of the forest in the format of the forest school in turn. Every week, a different person tried to find the key to the entrance door of the forest and the other children helped him/her. In this way, the children gained the idea of doing something in turn and learned to respect the rights of their friends. In this connection, after opening the door, C1 asked the following question; "*When will I open the door again? Will I open when we put up the tent?"*

In the cases observed in activities and free times, the children were tolerant towards their friends and followed the rules and waited for their turn. While playing with the pickaxe-

shovel, C6 showed tolerance to his/her friends by saying *"My friend, I have played with the shovel; it is your turn now."*

Social Life

The children were in contact with animals, plants and trees in the forest school application area. It was observed that they acted mercifully in these contacts and interactions they established. They shared their food with animals such as dogs and cats in the environment, gave water to flowers, and took care not to break their branches while climbing trees.

They tried to help when their friends fell or thought their friends would be hurt, attempted to help each other while they were having trouble doing something. While collecting wood to light a fire, C3 encouraged both himself/herself and his/her friends to help a child "*You cannot carry all the wood; I think we should help you."*

Findings related to the Fifth Sub-problem

What is the contribution of forest school applications to the language development of pre-schoolers?

Communication

It was observed that the children started discussions about the activities and natural events during the forest school applications. These discussions helped the children use new words, allowed them to communicate with their friends and improved their language skills. The results of these discussions were effective in the stage of decision-making. C2 indicated that he/she did not want any intervention in his/her personal space by saying *"If you dig there, you will destroy my nest. Go and dig another place."* C4 told to another child wanting his/her magnifier *"I am using it now; don't you see my friend. But if you wait for a while, I will give it to you."* C3 responded to C4 *"Ok, my friend. As there are few magnifiers, we need to use them in turn; when you are finished with it, please give it to me."* There were also some discussions about natural events. About the event of leaves' turning yellow and falling on the ground, C3 said *"The sun got lost, and when there is wind, leaves are falling down."* C5 responded *"The sun does not get lost; look! It is behind the clouds. As the weather is cold, trees are shedding their leaves to protect themselves."* At the end of this dialogue, they examined the leaves and came to an agreement. While C5 said *"Look! If the sun gets lost, do you think that these leaves get dry?"*, C3 ended the discussion by saying *"Of course they don't, you are right my friend."* It was observed that the children got engaged in different dialogues through these discussions and their effects on their language development were observed.

The children had the opportunity to express themselves comfortably with the unstructured and uninterrupted environment provided by the forest school application area. C7 expressed his/her opinions about the application area as follows; "*I like coming here very much because I can play as I want."* Some children were observed to be not only communicating with their friends but also with trees and flowers. During the observation he/she made, C4 talked to a flower "*Oh, my dear flower, you are withering as we do not water you. I will immediately water you*." and then he/she watered it. Looking at the flies and insects on the three, C3 said "*Insects, please do not harm the fruits of the tree; we will eat them."* In this way, both their interpretation skills and self-expression skills developed.

Discussion

In the current study, it was seen that the forest school practices affected the children's cognitive development, motor development, social-emotional development, self-care skills and language development to varying degrees.

It was observed that the children had the opportunity to move freely as the applications were carried out in a natural and unstructured environment during the study period. In this way, the children were able to make discoveries, make observations, play games, produce solutions to the problems and situations they encounter, fulfil the assigned duties and responsibilities and all these fostered the children's motivation and determination to complete a task and made them feel excited. In a similar study by Wells and Evans (2003), it was observed that the cognitive competence and concentration of children increased in natural environments.

It was observed that in the cognitive development of children, the problems they encountered in nature and their working in collaboration with their peers to find solutions to these problems were effective. The existing research also supports this finding. In a study on children in the United States (Anonymous, 2005), 27% increase was observed after participating in the forest school program in understanding scientific concepts, teamwork, developing cooperation with peers and adults, and improving conflict resolution skills. In addition, improvement was observed in self-esteem, problem solving skills, environmental awareness and motivation for learning (Blackwell, 2015a).

It was observed that through the discoveries and observations the children made during the applications, the children expanded their viewpoints and world of imagination, learned to look at events and situations from different perspectives, and produced new things from objects in nature using their creativity. Similar to these findings, the research conducted by Forest School Wales (2009) revealed that the experiences in a forest school are different from the ones in the classroom environment. It has been argued that these experiences provide the participants with an opportunity to gain a different perspective.

As the forest school applications were conducted in the open area, involved activities that required motor skills, children climbed trees, rolled on the ground, played games, jumped and ran in this environment. In light of the findings of the current study and the findings reported in the literature, it can be said that these activities performed outdoors help both the development of learning and physical skills. In the study conducted by Fjørtoft (2004), the movements such as running, jumping, climbing, performed by children in forest school applications, are defined as the most natural and most important method used for children's learning. The author also argued that free movement also contributes positively to the development of critical physical characteristics such as endurance, agility, psycho-motor coordination and muscle strength. In a similar study, Maynard (2007) stated that free movement in children not only fosters fine motor development, but also allows better control of their bodies. The author also stated that these developing skills are necessary for the development of other skills such as better use of the pen during writing, keeping calm and maintaining long-term attention. In the forest school environment, children used garden tools and daily life tools. It is thought that the digging activities carried out with these tools positively affected their fine motor development, and the carrying and lifting activities positively affected the development of their gross motor skills. It was observed that although the children had difficulty using the tools in the first weeks, these skills improved in the following weeks. The use of these tools was effective for the children to observe the creatures underground and make discoveries. Green (2012) argued that outdoor activities develop children's motor skills and thus offer opportunities for learning new skills. The author stated that children learn to hold and use the new tools in these environments safely and they develop finger

muscles while collecting materials to create games or use them for different purposes in such environments as well. These are called daily routine but unplanned skills.

In the forest school applications in which it was aimed that children learn by doing and experiencing, children learned to overcome the difficulties they faced with their own efforts, tried to do their own work independently and acquired the ability to act with the group. It was observed that confronting risks in this environment also affected the children's ability to undertake leadership, produce and implement solutions. In the literature, it is stated that through the forest school applications, children get accustomed to working independently from adults, and they have increased their awareness of other people's personal areas, and they can establish new ties and friendships with their peers (Forest School Wales, 2009).

Another important finding of the current study is that while children needed adult support in many cases, they started to receive support from their peers over time, and then they started to do their daily work with their own efforts. It was determined that this was due to the fact that forest school applications and environment encouraged children and increased their self-confidence. In a study by O'Brien and Murray (2006), it was observed that the self-confidence of a child who was initially introverted and in need of constant adult support increased after joining the long-term forest school program.

In the applications conducted, the children learned experientially which situations they would pay attention to while taking individual responsibility. They tried to make a risk analysis before starting an activity and to predict what might happen as a result of the activity. Therefore, it is thought that the children's self-confidence increased and that they were encouraged to be engaged in self-directed learning activities. Similar to these findings, in a study conducted by Parks (2013), it was concluded that playing outside allows children to evaluate risky situations and learn to take risks. It has been argued that children who are exposed to acceptable risky situations at a young age are less likely to make wrong decisions in their future lives.

Challenges arising from the structure of the forest school and activities that require struggling with nature directed the children to cooperate with their peers, to do team work, to establish a positive relationship and respect with nature. In the applications, it was observed that the challenging and difficult conditions of natural life encouraged children to act as a team, and over time, children developed a positive connection with nature and living things. Parks (2013) argued that the nature of forest school applications encourages collaborative work in groups. It was stated that such activities help children to know themselves, value their peers and establish relationships, and offer many opportunities for cooperation, social interaction and sharing.

While the children were in nature, they started to better understand the habitats of creatures over time, which was manifested in their thoughts and actions. As they interacted with animals and living things, they acted more mercifully towards them, so it was seen that they began to break down their prejudices against nature and animals. In a study by Thomas and Thompson (2004), it was found that being in natural environments enhanced the well-being of children by allowing them to relax, calm and interact with their families and animals. Lester and Maudsley (2006) stated that playing in nature improves mental health and plays a critical role in the improvement of psychological health of children and adults. In light of the findings in the literature, it can be said that children have the opportunity to get to know plants and animals and establish ties with them in this environment. In this way, the creatures they passed by before became important for them and they started to respect them.

Preschool children are developmentally curious and in the process of continuous learning. This became more evident in the forest school applications. The children asked more questions and searched more due to the dynamic nature of the environment and

activities. This manifested itself in the form of speech, discussion, interpretation, questioning, making explanations and self-expression. It was seen that the discussions were also made about natural events. It can be accepted that these events develop skills such as analysis, inference, and indirectly and directly affect language development positively. Similarly, Parks (2013) argued that forest school applications develop children's communication skills. He also stated that it enables children to express their feelings, thoughts and needs through the free environment and creative games it offers.

The children used the explanatory language while explaining their activities in nature to their friends or while trying to persuade their friends for the games they would play. It was also observed in situations such as analyzing the environment, explaining the situations or expressing themselves. This is parallel to the findings of Forest School Wales (2009). In the current study, it was concluded that the children explained their ideas to their peers in discussions and while creating games via the forest school applications.

Suggestions

There is a limited amount of research on forest schools. With a detailed planning, studies in which observations are carried out before and after the application and where more detailed information can be obtained from children will provide in-depth information. In support of this suggestion, Nixon (2015) suggested that a study on a larger group should be carried out with the quantitative data collection method after his study on forest schools. Lovell (2009) stated that a longitudinal design should be used for a more complete and detailed evaluation of forest school activities. He argued that a well-designed longitudinal study would allow examining the long-term effects of forest school activities. In this context, it is clear that the quantitative and longitudinal studies will bring a different dimension to the forest school research.

Future research can be carried all over Turkey with larger samples. Lovell (2009) stated that comparing the experiences of participants from different socio-economic and cultural backgrounds would provide a better understanding of the impact of forest school applications on children. Accordingly, it is foreseen that studies with larger samples from different socio-economic and cultural backgrounds will yield healthier results.

Since it will be difficult to manage the process and collect data, research should be carried out together with at least one assistant. This will both facilitate data collection and ensure a more planned conduct of the process. In support of this suggestion, Davis and Waite (2015) argued that the limits, roles, and responsibilities should be set in a way that does not leave a question mark for forest school instructors and anyone involved in the process. They stated that this could create a critical perspective for planning and evaluation, and would make better sharing of goals and expectations possible, which would create an open and consistent process for children. In this context, it is thought that a planned and programmed education environment will be created in an environment where all the tasks and responsibilities of all of the forest school participants are predetermined, assessment can be made more objectively and an open and consistent process will be generated for children.

It is thought that with the incorporation of out-of-school and forest school applications into pre-school curriculums by teachers and curriculum developers, the developmental objectives will be more quickly achieved. In addition, consideration of the process should not be only limited to the forest school but a planning should be made from a broader perspective to include all the out-of-school learning environments in the curriculum. Recently, out-of-school learning environments courses have been added to some of the undergraduate curriculums of universities. The introduction of forest schools in such

course will allow pre-service teachers to get acquainted with this concept earlier and will provide ease of application.

Conclusion

In the current study, the contribution of the forest school applications to the development of children was investigated. Before the applications, it was attempted to determine the perspectives and preliminary information of the children on the concepts of forest, animal and plant. According to the interview results, it was found that all of the children had not been in a forest before and that they had limited information about the animals and plants in the forest. The discoveries and observations made in the forest school allowed the children to develop their creativity with the opportunities it offers for them to re-interpret the living things in nature and to create new objects. It was observed that the children felt more motivated, interested and excited to do the activities, and at the end of the process, their level of motivation was found to have increased. Because of the problems they encountered during the applications, they started to take initiative, to create cause-effect relationships and to find solutions to these problems; thus, their problem-solving skills improved.

As long as they took part in these applications, the children carried things and objects from one place to another, used garden tools and everyday life tools as they wished, and performed movements such as running, walking in balance, climbing a tree and rolling on the grass requiring gross motor skills. These activities positively affected the children's motor development.

In the forest school applications, the children learned to take precautions in various risky situations they encountered, to comply with the specified security measures and rules, and to predict the situation that might occur as a result of their actions by doing and experiencing. They tried to be orderly at the time of implementation and to act in cooperation. Before the children came to the nature, they themselves got dressed in the clothes provided so that they would not be affected by the seasonal conditions, and they carried this newly acquired habit into their daily life and started to put on their daily clothes on their own. Thus, the children’s self-care skills also developed.

It was observed that the children were in cooperation with their peers during the applications and that they worked in teams. It was also observed that they were tolerant towards their friends and other living creatures, they used kind words, and they acted in harmony by not disrupting the group dynamics. This positively contributed to their social-emotional development.

It was observed that the children experienced disagreements with each other in various situations and issues during the forest school applications and during the time in which they were in the forest school area, and they tried to resolve these disagreements by making various inferences and discussing them. In these cases, it was determined that they used new words and sentences to express their feelings and to make explanations. It is believed that all these contributed to their language development.

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RESEARCH ARTICLE

Okul Öncesi Dönemde Orman Okulu Uygulamaları: Bir Durum Çalışması*

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Özet

Bu araştırma, orman okulu yaklaşımının okul öncesi dönem çocuklarının gelişimlerine yönelik katkısını incelemek amacıyla yapılmıştır. Bu kapsamda araştırmanın çalışma grubunu, anasınıfına devam eden 48-60 aylık 7 çocuk oluşturmaktadır. Araştırmanın örneklemi amaçlı örneklem yöntemlerinden olan kolay ulaşılabilir durum örneklemesi kullanılarak belirlenmiştir. Yürütülen çalışma bir durum çalışması olup, sekiz haftalık uygulama sürecini içermektedir. "Genel Bilgi Formu", "Uygulama Öncesi Sorular", "Faaliyet Değerlendirme Formu (Bireysel)", "Faaliyet Değerlendirme Formu (Genel)", "Gelişim Gözlem Formu" olmak üzere beş adet veri toplama aracı kullanılmıştır. Toplanan veriler yazıya dökülerek kod ve temalar oluşturulup içerik analizi yapılmıştır. Veriler neticesinde orman okulu uygulamalarının çocukların bilişsel gelişimini, dil gelişimini, sosyal ve duygusal gelişimini, motor gelişimini ve öz bakım becerilerini bazı durumlarda olumlu etkilediği ve çocukların gelişimlerini desteklediği sonucuna varılmıştır. Elde edilen bulgular ışığında, orman okulu uygulamalarının okul öncesi öğretim programına entegre edilmesinin önemli olduğu düşünülmektedir.

Anahtar Kelimeler: Orman okulu, çocuk gelişimi, durum çalışması, okul öncesi dönem.

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