Waterscapes – Water Games and their Perceptual Descriptions in Pre-School Children Paintings

Tuğba Düzenli[1]* Serap Yılmaz[2] Elif Merve Alpak[3] and Abdullah Çiğdem[4]
[1] *Assoc. Prof., Karadeniz Technical University, Faculty of Forestry, Landscape Architecture Department, tugbaduzenli@gmail.com*
[2] *Assoc. Prof., Karadeniz Technical University, Faculty of Forestry, Landscape Architecture Department, serapyilmaz@ktu.edu.tr*
[3] *Assist. Prof., Karadeniz Technical University, Faculty of Forestry, Landscape Architecture Department, elifmerveakyol@hotmail.com*
[4] *Res. As., Asssoc. Prof., Karadeniz Technical University, Faculty of Forestry, Landscape Architecture Department, abdullahcigdem1@gmail.com*

ABSTRACT
The association between water and game is the main topic of the present study. The study aimed to investigate the perceptions of 3-6 years old pre-school children on waterscapes and water games through their paintings. 86 children attending two kindergartens in Trabzon, Turkey participated. The children were asked to paint a picture about water. Children's paintings were analyzed based on the type of the depicted water source and the type of game, while the children's perceptions about the water were analyzed based on their statements about their paintings and converted into numerical data. Conducted analyses demonstrated that children mostly associated the concept of water with the sea and portrayed swimming as a water game. 6 different water types were depicted and 15 different water games were portrayed. It was determined that water is an important game tool for children, allowing them to play various games and it was perceived positively.

Keywords: Children, water, game, perception, painting

1.INTRODUCTION
Several educators used different definitions for the child or childhood. There is, however, there is a consensus among all educators (William, 1989, William, 1999; Jewell, 2000; Gibbs, 2003; Vickers and Matthews, 2002) that the individual has unique behavior, perception, communication and expression styles until a certain age. These specific age intervals constitute the concept of childhood, a special period in human life. Developmental psychology argues that childhood has different developmental stages when compared to other ages, and the individual experiences basic achievements during this period. Thus, the developmental characteristics and requirements of this period should be considered when designing physical environments for children. Physically and socially, children's experiences are inseparable from their development process, and part of child development is perceptual development (Ingleby, 1974, Wolfe and Rivlin, 1987). Gibson (1979, p.223) stated that "We should be able to perceive to move around, we should be able to move to perceive." The facilities that the user perceives lead to new movements and activities. Thus, when designing children's spaces, visual perceptions should particularly be considered as a parameter in designing living spaces for children during this period. Such an approach requires a user-centered spatial planning and design and would help create adequate facilities, activities and spaces for children.

Since early childhood experiences play a critical role in shaping lifelong attitudes, values and behavioral patterns of children, the significance of pre-school education, children's spaces and perceptions during this period is increasingly scrutinized. Perceptions are also the basis of children's cognitive, emotional, and motor development (Phenice & Griffore, 2003, Tilbury, 1994; Wilson, 1994). Pre-school education plays a very important role in managing, promoting and developing the abovementioned traits in children, who are by

nature curious about the environment, and motivated to learn and think. Studies conducted by Montessori (1966), Pestalozzi (1951), McMillan (1984), and Isaacs (1930) demonstrated that a rich and diverse environment that can provide children with the skills necessary for their future educational and personal lives should be the most important objectives of preschool education. It was observed that children, who initiate the process of learning about their immediate environment by touching, tasting, hearing and seeing, develop the same process by including questioning and observation skills over time. Thus, environmental conditions that the children are exposed during this process are very important (Kaptan, 1999).

Rapid urban living conditions reduced sensory participation in the environment for contemporary children. The streets may not provide adequate play facilities since they are not safe due to vehicle traffic. On the other hand, playgrounds, especially in Turkey, include bordered square areas, and standard, fabricated (produced with unnatural material, artificial, plastic) play furniture and equipment (Çukur and Güller Delice, 2011). However, children need natural environment, playgrounds and play tools, the relationship with nature established during childhood promotes a strong connection in adulthood. Establishing relationships with nature at an early age may not only meet a significant requirement for the development of the child, but it can also provide the awareness that the child is a part of nature (Moore, 2002, Fjortoft, 2001, Moore, 1986). Thus, interaction with nature helps children develop their motor skills by increasing their involvement in nature (Lester and Maudsley, 2007; Bell, Wilson & Liu, 2008, Özdemir & Yılmaz, 2008, Parsons, 2011). Water element is one of the significant nature elements that children establish relationships with. Some research indicated that water environments induce a positive response from the children (Cunningham & Jones, 1997; Simmons, 1994; Tapsell, 1997; Tapsell et al. 2001; Yamashita, 2002; Zube et al., 1983). Zube et al. (1983) found that water significantly enhances scenic values for children. According to Kates and Katz (1977), water is an important part of the world of children's games. Playing with natural elements such as water has several benefits for children. In a study on the views of children about thematic design, Coad and Coad (2008) also demonstrated that the use of water, nature, and sea elements were the most common preferences among the children. The majority of the children stated that they preferred environments that contain water or coastal elements. In the context of the present project, thematic design means art, images, design and textures across various aspects and areas in the hospital. Majority of the children stated that they preferred coastal areas. Tunstall et al. (2007) found that rivers were appreciated as 'natural' spaces by children. The intrusions by human-constructed elements and 'out of place', non-natural objects into river environments were perceived negatively.

Authors such as Piaget (1926, 1951, 1952) and Montessori (1963, 1964) emphasized in their theories that interaction between the children and the environment is foundation of child development, and the environment includes quantifiable physical components for cognitive-perceptual development. When it is considered that children use observation, exploration, and trial-and-error methods in learning, it can be argued that they need a physical environment which is rich in resources and contains natural elements. Active participation in the physical environment can increase cognitive development (Kohlberg, 1968). In brief, the games they play with natural elements such as water and their perceptions about these elements are significant for the cognitive development of the children (Kellert, 2005, Wells, 2000). Thus, the association between water and games, which is the main topic of the present study, is discussed in the next section.

1.1. Game and water

Childhood experiences of an individual shape her or his adult personality. The most effective method for personality development and formation of identity is playing games (Gazali 1058-1111; Comenius, 1592 – 1671; Rousseau, 1712 – 1778; Froebel , 1782-1852; Pollart vd., 1997; Huizinga,1995). In modern cities, children often cannot find playgrounds and spend their time on their computers and other devices at home.

However, the children learn thinking skills, making their own decisions, taking responsibility for their actions, collaboration and sharing, develop their imagination and creativity by playing games. They find opportunities to concentrate, organize their skills and improve their self-knowledge. The perception of children is at very high levels when they play games. In areas where they can play freely, their psychological, emotional and physical abilities would be the highest. Nature provides instructional and learning by doing opportunities for the children. Time spent in the nature leads to positive effects that can contribute to the improvement of creativity, problem solving and concentration (Kellert, 2005; Wells, 2000; Lester & Maudsley, 2007). It was determined that natural areas encourage cognitive activities and promote self-confidence of children by encouraging adventurous behavior (Moore, 2002; Fjortof and Sagei, 2000; Fjortoft, 2004; Moore, 1986; Turgut and Yılmaz, 2010). Water is also one of the important gaming tools, which offer children the opportunity to learn and explore.

Studies on children's perception of water are limited. Yamashita (2002) investigated how the children and adults perceived water in a study conducted on a river in Japan. In conclusion, it was determined that children were interested in the flow of the water flow and being close to the water. In the present study, children are the main users of the environment, thus it was determined that the planners need to focus more on short-distance elements including water, especially on the quality of water elements. Furthermore, Kates-Katz (1977) and Tuan (1977-1978) stated that children's emotions about water and related activities included basic emotions of joy and pleasure. Child therapist Gjesing Gudrun (2001) stated that water and related activities were of interest to children, and that water is one of the most suitable environments to play games.

Water games are quite diverse. For preschool age children, water containers in different shapes and volumes can be used. Water games could help children relax and develop their sensory and motor skills. Providing the child with the ability to play in a water-filled space contribute to both physical and mental development and self-confidence Water games help children relax and develop their sensory and motor skills. Providing that the child with the opportunity to play in a water-filled space contribute to both physical and mental development and self-confidence (Ginott, 1994; Miller and Almond, 2009). It was observed that children's concentration is improved when playing with water (Ginott, 1994). Playing with water could help children relax in densely populated urban areas. Contact with natural elements such as water and living in a natural environment bears a strong impct on the cognitive and emotional development of children (Kellert, 2002, Yilmaz et al., 2017). Vandalism is more prevalent in cities where concretion is common (Fisher and Baron, 1982; Moser, 1992). Designs that include water have positive effects on the environment (Ünal, 2009; Yavuzer, 1998; Turgut and Yılmaz, 2010).

Using water as a game tool will ensure that children would feel joy for a long time. Children could also learn certain principles of physics while playing with water. For example, they may observe the different states of matter and different behavior of liquids. For instance, a child who creates a pool with soil and water, or a dam by piling up sand in front of the water would observe the effects of water pressure. Children, who build towers with water and sand or mud, could learn balance and carrying capacity. One of the significant questions that should be answered for its use in children's spaces is the meaning of the water element, which is considered to possess the abovementioned instructional and developmental properties, for the children. Because individuals are significantly influenced by their environment, and more importantly, their environment directly affects individuals' happiness. This is significantly determined by the spatial elements and components that the environment includes (Whyte, 1980; Ward and Russell, 1981). User requirements should be known in order for the design of open spaces to provide successful living spaces. The users of children spaces are children, thus the present study attempted to determine how the water was perceived by the children, which is a natural playground, and what are their views on water games. Therefore, the final objective was to determine the accurate use of water elements in children's spaces

based on the wishes and perceptions of the children. To determine the use of water in children spaces, the following research questions were constructed:

- Which types of water elements do the children recognize?
- According to children, which water elements can provide a space for games and for which games in particular?
- According to children, which properties does the water possess and which emotions does the water define?

2.METHOD

2.1.Research Method

The present study is a qualitative study that examined the perceptions of 3-6 years old preschool children about water and water games through their paintings. Asking young children to paint paintings and analysis of these paintings method to determine their perceptions and to discover their inner world (Falk et al., 1978; White and Gunstone, 1992). During the painting process, the child's thoughts are synthesized, and the synthesized thoughts are expressed by color, shapes and lines (Malchiodi, 2005). Children combine their daily observations with their own observations to reflect their perception on the world in their paintings. Painting is also a pleasant activity and an expression technique for children (Hayes, Symington and Martin, 1994; Johnson, 1993). According to Isbel and Shirley (2003), painting is an effective, simple and sincere narrative language when compared to pre-learned vocabulary and expressions for children. Children may not like to answer questionnaires or participate in interviews, but they paint effortlessly, easily and voluntarily (Lewis and Greene, 1983). Paintings are also an alternative way for children who cannot express themselves verbally (Chambers, 1983; Rennie and Jarvis, 1995). Children do not only reveal their visual perceptions about the outside world in their paintings, but also provide several clues about their own inner world by expressing their imaginations about their emotional and intellectual life, contradictions, desires, frustrations, fears, joys about the real world. From this perspective, the painting can be considered as an important tool in understanding about the child's daily routine and life cycle (Schirrmacher, 2002) and the cognitive, emotional and social level of the child on a topic (Yurtal and Artut, 2008; Sadık et al., 2011; Günindi, 2012). In the present study, children's paintings, which is a significant part of class-based pedagogy, by embodying and focusing on children’s ideas; painting was preferred in particular, since the colors occupy a significant space in children’s world. Colors can attract the children’s attention by creating different emotions, and can help visual communication (Zentner, 2001). Rather than standardizing children, it is important to emphasize their different ideas from a pedagogical point of view (Trafi-Prats & Woywod 2013). The success of research on children that investigate the subjective instead of representing the whole depends on the ability to communicate correctly with the children, which is possible with the painting method (James & Prout 1997).

Thus, the present study aimed to investigate perceptions of pre-school children about water element through the paintings they drew. It was considered significant to examine children's perceptions about water and water games to provide important information on future landscaping studies and children’s space designs. In children paintings painted in the present study, the responses to the following questions were analyzed:

1. What were the water elements painted in children’s paintings?
2. How did they expressed the water?
3. Which water games were included?

2.2. Study Group

The study was conducted with children in the 3-6 age group, which was accepted as the play age in the literature. Because in this age, mobility, power of expression and independence improve. The children play extensively at this age, all movements are very rapid, the position is altered constantly, groups of 3-4 individuals are formed, and separate groups of girls and boys are formed. The most effective forms of activity, in addition to the previous periods, include sliding, swinging, gripping, throwing, stringing,

writing, interlining, sticking and cutting (Ergin, 1982; Yörükoğlu, 2006). In brief, the high level of play activity was the most important reason for the selection of this age group.
A total of 86 children (48 female, 38 male) attending 3-4-5-6 age classes at two kindergartens) in Trabzon province in the 2017-2018 academic year participated in the study.

2.3. Data Collection

The data were collected during the 2017-2018 academic year fall semester. For data collection, verbal approval of school administration and parents was obtained and the adequate date and time was determined for data collection. Each child was asked to paint a picture about the water and water games after paint material and A4 paper sheet were provided. One of the main problems experienced in image analysis is to interpret the pictures from the researcher's perspective (Leonard, 2006). It is important to understand children's paintings. Because each child approaches the painting in a different manner and expects it to be accepted that she or he has a painting style unique in its composition, forms, and colors that she or he loves or does not particularly love (Malchiodi, 1998; Ersoy and Turkkan, 2009). The picture is a powerful tool for the analysis of children's imagination (Rodari, 2007), however it is not sufficient to analyze children's imagination alone. Thus, it is absolutely necessary to interview the child about the painting that she or he has painted. In order to overcome this problem, students were asked to briefly describe the picture they drew after they finished painting. Later, teachers were asked to write the names and surnames of the students, how old they were and what they told about their paintings on the back of the papers. Student statements were transcribed individually as the child explained her or his painting to the teacher after completing painting. As the students drew their pictures, classroom teachers and the authors were present in the classroom environment.

2.4. Data Analysis

The pictures were analyzed by the researchers. Each water element and game type painted in the picture were listed and the counts of these items were calculated and grouped under two categories. These categories were water types and water games. The items included in each category were evaluated by the researchers and converted into numerical data to be included in frequency tables.

Initially, the type of water painted by each child was noted. Then, the types of water depicted in the pictures were classified under groups and the obtained numerical data were analyzed by SPSS (v. 23.0) software. Although whether the type of water was the sea, lake, pool, etc. was checked by considering the children's narrations, those paintings that included structural elements such as stairs, etc. were considered as a pool, natural paintings that were depicted as large elements were considered as the sea, and when the sea is depicted as a small element, it was coded as a lake. Then, the games included in the pictures were noted based on both the paintings and writings. And game types were also classified, counted and converted into statistical data and analyzed. Since the last stage included perceptual definitions, the data were derived from the texts written by the students to describe their pictures. The perceptual descriptions about the water elements on each painting were noted, counted, and converted into statistical data and analyzed. The authors did not conduct a classification based on the game type or perceptual definitions, and sub-groups were created spontaneously based on the texts written by the children. Groups in game types were determined by noting the game expressed in children's statements and perceptions were determined by noting the attributes they used to define water in their statements.

3. FINDINGS AND DISCUSSION

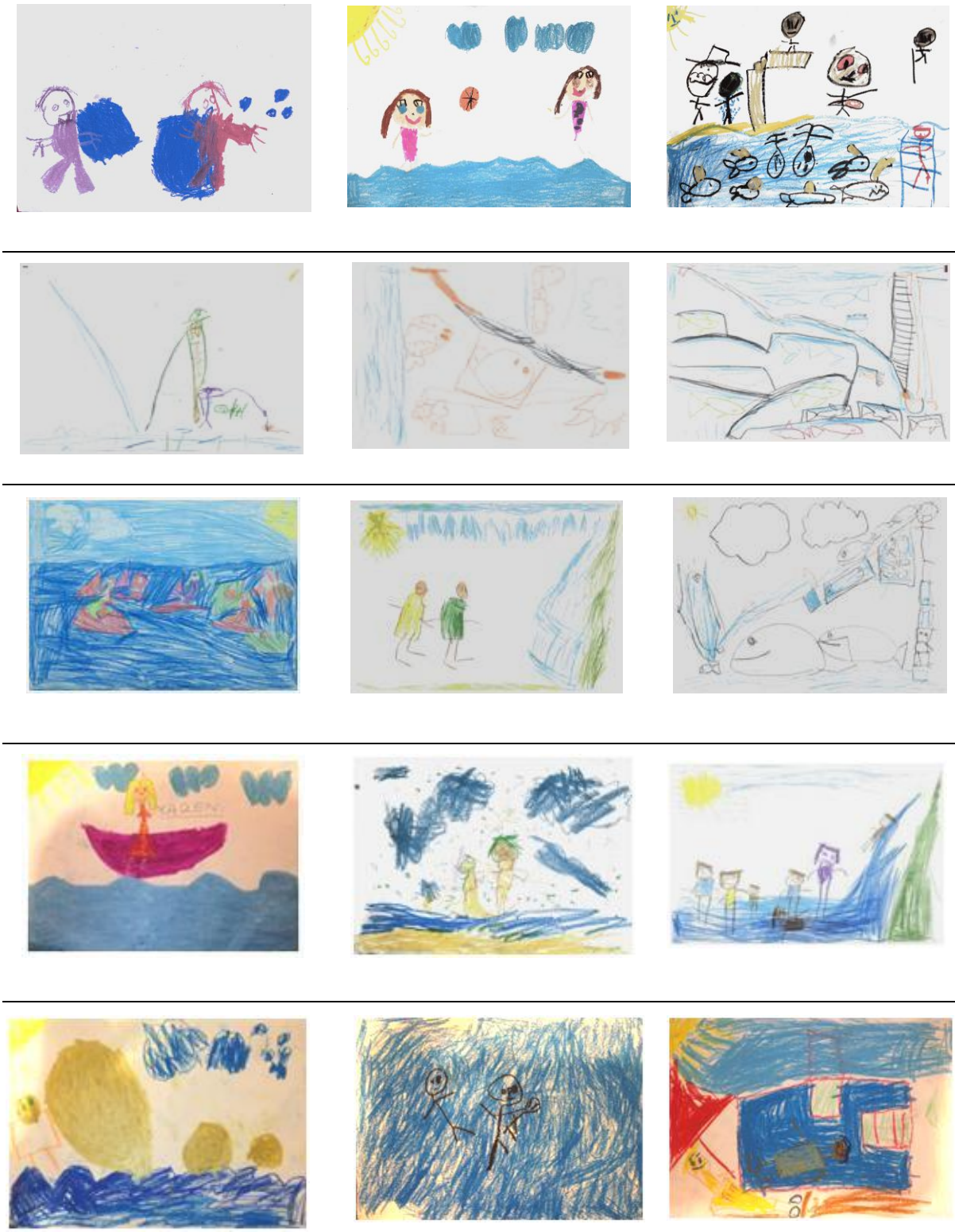
Analyses demonstrated that children included more than one topic related to water types and water games in their paintings. The topics illustrated by the children were collected under 6 different water types, 15 different water games and 14 different perceptive description categories. The frequencies and percentages of water types and water games

illustrated in children's paintings are presented in Table 1. Samples of the paintings painted by the children are presented in Table 2.

Table 1. Water categories reflected in children's drwaings (N=86)

Painting categories		Frequency	%
Types of water illustrated in children's paintings	Sea	34	30.4
	Stream	12	10.7
	Lake	13	11.6
	Pool	11	9.8
	Fountain	7	6.3
	Puddle	9	8.0
Water games illustrated in children's paintings	Swimming	67	77.9
	Jetting water	45	52.3
	Water polo	32	37.2
	Pouring water into sand	28	32.5
	Fishing	23	26.7
	Feeding fish	21	24.4
	Throwing rocks to the water	29	33.7
	Racing with friends	20	23.2
	Squirting	15	17.4
	Sliding on water	30	34.8
	Playing with bubbles	18	20.9
	Bubble blowing	16	18.6
	Jumping over the waves	24	27.9
	Floating ships	27	31.3
	Boat trip	18	20.9
Children's perceptual descriptions about water	Entertaining	72	83.7
	Fun	63	73.2
	Exciting	42	48.8
	Crazy	36	41.8
	Refreshing	21	24.4
	Relaxing	19	22
	Beautiful	65	75.5
	Pleasing	58	67.4
	Blue	47	54.6
	Wet	32	37.2
	Active	29	33.7
	Wavy	23	26.7
	Large	51	59.3
	Deep	17	19.7

Table 2. Examples of children's paintings



3.1. Findings on the types of water illustrated in children's paintings

Examination of the children's paintings demonstrated that the children depicted 6 different types of water (sea, lake, stream, pool, puddle, fountain). It was found that they mostly illustrated the sea (30.4%), and it was determined that this was due to the

sea activities they conducted during summer holidays. The children stated the following descriptions in their expressions:

"We are swimming with my mom on the holiday in the sea"
"We're pouring water on the sand with my friends on holiday"
"My mom and dad and me racing in the sea in summer."
"Me and my dad fishing at the sea in summer"
"I play with my brother at sea"
"I play ball at sea"
"It's hot and we're swimming"
"I'm throwing rocks at the sea"

Due to the fact that they used the phrase "in holidays" in their statements and there are not several spaces in Trabzon that allow children to spend time with water, they could only have contact with water in summer holidays and define it as the sea and the pool. This demonstrated that children perceived water as an element that can be accessed in summer holidays.

When other types of water were examined, it was observed that 11.6% illustrated lakes, 10.7% illustrated streams, 9.8% illustrated pools, 8% illustrated puddles and 6.3% depicted fountains. The percentage distribution of water types in the paintings is presented in Figure 1.

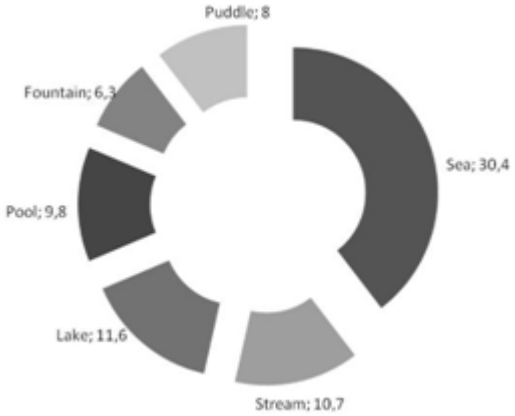


Figure 1. Distribution of water types in children's paintings

The children classified the types of water with descriptions given below:

"Fishermen by the river"
"Fish swimming in the sea"
"Boats in the lake"
"I'm sliding to the pool"
"Water on the fountain"
"We're putting our hands in the fountain water with my dad"
"We're playing with my friend in the water pool"
"We went to the river"
"In holidays, w ego to the beach"
"I got wet in the fountain"
"I'm stepping on the water in the garden"
"We're playing ball in the pool"
"There are fish in the lake"

The streams and rivers in the Uzungöl, Coşandere, Altındere National Parks in Trabzon are frequently visited during the weekend, so the lake and the streams were reflected on children's paintings. Different types of water with numerous features such as calmness, motion, sounds, optics, joy, refreshment, recreation, color and light can be used as versatile design elements in landscape architecture (Rubenstein, 1992). Pools, lakes, puddles and ponds have standing water surfaces. Standing water surfaces have reflective properties (Burmill et al., 1999). Their reflections can attract children and improve

children's creativity by arousing curiosity. Fountains, streams and rivers have moving water surfaces (Şentürk, 1990). They can create excitement, movement, energy among children with their visual and sound effects. In other words, different types of water elements can have different psychological effects, and the activities that could be conducted in the space can vary based on the type of water element available (Düzenli et al., 2014). Thus, designs of spaces dedicated to children should include different types of water.

3.2. Findings on the water games illustrated in children's paintings

Interpretation of the children's paintings demonstrated that children illustrated 15 different water games (swimming, jetting water, water polo, pouring water on sand, fishing, feeding fish, throwing rocks into the water, racing with friends, squirting with water gun, sliding on water, playing with bubbles, making bubbles, jumping on waves, floating ships, boat rides). Among them, they illustrated mostly the swimming activity (77.9%), followed by jetting water (52.3%) and water polo (37.2). The distribution of the other games is presented in Figure 2.

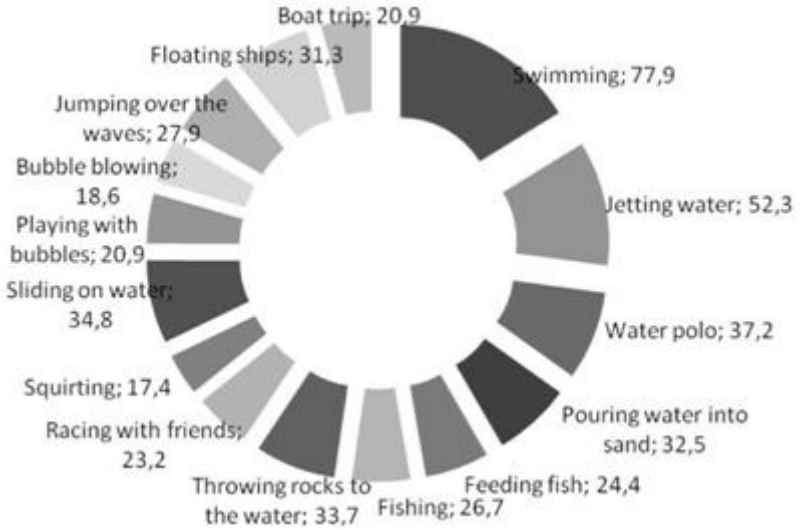


Figure 2. Distribution of percentages of water games depicted in children's paintings

The children classified the water games with descriptions given below:
"Swimming with my mom"
"Swimming with my siste in the pool and we're racing"
"I'm putting water on my friend"
"Wetting my dad with water"
"We're playing water polo"
"I made bubbles"
"Wetting the sand"
"Feeding the fish with my dad"
"We jumped over the waves with my sister"
"I'm shooting them with the watergun"
"We rode a boat with my dad"
"I blew up the bubbles in the pool"
"My mom made a paper ship and we put it in the sea"

It is an accepted fact that there is a relationship between the concepts of children and playing. All activities that aim to have fun are considered as playing (Terr, 2000). Games are associated with children and vice versa. Because games are regarded as the most effective tool that helps children to unleash their creativity and acquire learning (Winnicott,1971). Creativity is acquired not only through the mind but also via the instinct to play. The creative mind loves to play with the objects it loves (Robinson,

2003). Findings of the present study revealed that water is a fun and entertaining gaming tool for children.

According to Arnold (1996), game types that offer flexible, different surfaces are important for the development of children and provide the opportunity to improve their creativity and self-confidence. Water-related games that are examined in the present study were also significant for child development since they offered flexible and different surfaces. Water games provides adventure and exploration opportunities for children. Game spaces should enable the discovery of different types of games that include different activities and creative and natural elements such as water. Well-designed, well-managed game environments should allow for the development of children's motor skills and different types of development such as social development, learning, decision-making, fantasy play and play for fun (Alqudah, 2003). The water element is a material suitable for the abovementioned opportunities; a powerful game space builder and an important activity tool. Water is an effective learning element that offers opportunities for children to play. Thus, the open spaces with water as a gaming tool should be increased.

3.3. Findings on the perceptual descriptions of the children about water

In landscape design and planning, it is observed that associations of water in users and whether these associations are related to an activity conducted in the space are neglected. Thus, obsolete designs emerge and cause both the consumption of social resources and inability to fulfill user needs. In this respect, it is important to determine children's perceptions about water in order to design successful spaces for children. Analysis of the paintings painted by the children demonstrated that children used 14 different perceptual descriptions about water (entertaining, fun, exciting, crazy, refreshing, relaxing, beautiful, pleasant, blue, wet, active, wavy, large, deep). They described the water mostly as entertaining (83.7%). This was followed by beautiful (75,5) and fun (73.2%). The distribution of other descriptions is presented in Figure 3.

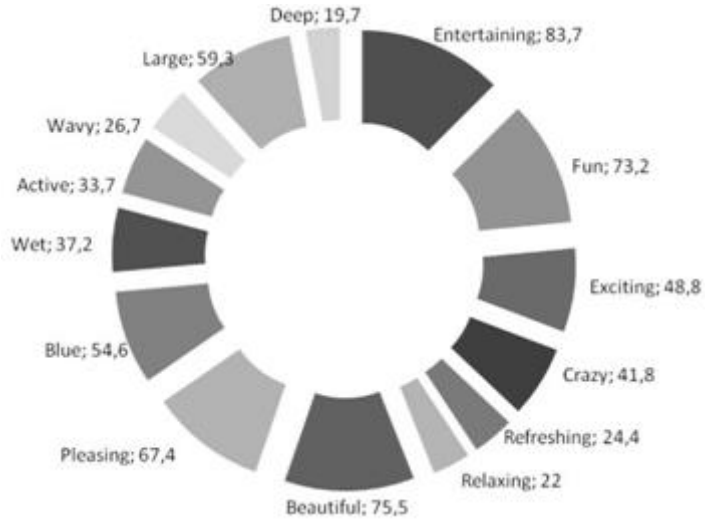


Figure 3. Distribution of perceptual descriptions about water in children's paintings

The children classified their perceptual descriptions about water as follows:
"The sea is fun"
"It's entertaining to play with water"
"The water refreshes me"
"The sea is blue"
"The pool is very large"
"Water is wet and fun"
"The sea is very beautiful"
"The streams are nice"

"The fountains are wet."
"The sea is rough"
"The lake is very beautiful and blue"
"I blew a big crazy water bubble"
"I'm very happy at the shore during summer"

The spaces that contain water elements attract individuals' attention, render the environment more legible, increase participation and excitement. Several studies determined that water increased visual and perceptual satisfaction (Nasar, 1994; 2000; Campbell, 1994). Pre-school education includes activities that support the development of children's visual perceptions. One of these activities is educational game tools. Water is also an important game tool for children and a positive material that supports the development of perception. Water is also a positive material in children's perceptual world. The present study demonstrated that water created positive emotions such as "entertaining, beautiful, fun" in children. In other words, water occupies a significant space in children's perceptions, thus, spaces built for children should include water elements.

4. CONCLUSION AND RECOMMENDATIONS

The role of games is significant in child development. The child perceives the world as a playfield and searches for the signs of games in even the most serious environment. In other words, playing is the meaning of life for a child. Children require environments that enable contact with natural elements that offer recreation, activity, learning and play opportunities (Behroozfar, 2001; Gharahbeiglu, 2007). Water is also an important natural element, a gaming tool, a powerful space creator and a major activity source for the child. Water is a game tool for children of all ages. However, the spaces that allow water to become a playground for the children are limited. The present study was based on the data obtained from children's paintings and conducted to understand the utilization of the water element in spaces suitable for the perception and can meet the play needs of the children.

Study findings demonstrated that children identified the water with the concept of the sea and painted most swimming as a game played in water. Since there are not several water elements in school gardens or spaces such as parks, etc. in Trabzon city center, it was observed that they associated water with summer holidays Nevertheless, it was observed that in their paintings they described six different types of water, namely the sea, stream, lake, pool, fountain and puddle. One of the important results of the present study was the water games that the children illustrated. Children illustrated 15 different types of water games (swimming, jetting water, water polo, wetting the sand, fishing, feeding the fish, throwing rocks, racing with friends, squirting with water gun, sliding into, playing with bubbles, creating bubbles, jumping over the waves, boat ride). This supported the view that children perceived water as a game tool. Furthermore, the perceptions of children about water were investigated in the present study, and it was determined that children described water as "entertaining", "beautiful", and "fun". Based on this finding, it can be stated that the children's space designs should definitely include water elements.

User requirements should be known for successful designs and to create habitable spaces. According to Alexander (1964), a good space emerges as a result of common experiences. Lang (1987) believed that environmental designers should conceive the harmony between human values and the environment better. The aim of the designer is the happiness of the individual and the society. Designers should explore the perceptions and preferences of individuals when designing a space. The accurate information about the environment should be obtained from the users, as the environment would not make sense without humans in it (Ertürk, 1979). The present study findings are very important since the users of children's spaces are the children themselves. Because the current study data were obtained directly from the children.

While Francis and Cooper Marcus (1992) suggested that convenient urban open spaces are places where users can relieve the urban stress and feel good emotionally, the results of a study by Ulrich (1983) demonstrated that encountering natural elements such as water in urban environments accelerates the process of getting rid of stress and well-being. In other words, the use of natural elements such as water in urban spaces is very important both aesthetically and psychologically (Huang, Shu-Chun, 1998). These positive effects of water are more important for children when compared to adults. Thus, in urban spaces that are designed for children or in school gardens, the perceptual characteristics of water should always be considered and water game opportunities should be provided.

REFERENCES

Alexander, C. (1964). Notes on the syntesis of form. Oxford: Harvard University Press.
Alqudah, Y. M. M. (2003). Çocuğun gelişiminde oyun alanlarının rolü, Ankara Üniversitesi Fen Bilimleri Enstitüsü Yüksek Lisans Semineri, Ankara.
Arnold, S. (1996). Child Playgrounds. Available from http://www.bpfp.org/ Playground Design.
Behroozfar, Fariborz. 2001. The basics of designing open spaces of the residential areas in concordance with the physical and psychological conditions of the children (Persian). Tehran, Iran: The Residential Investigation Center Press.
Bell, J. F., Wilson, J. S. , Liu, G. C. (2008). Neighborhood Greenness and 2-year Changes in Body Mass Index of Children and Youth. American Journal of Preventive Medicine, 35(6), 547-553.
Burmill, S., Daniel, T., C., Hetherington, J., D., 1999, Human Values and Perceptions of Water in Arid Landscapes, Lanscape and Urban Planning, vol. 44, No. 2-3, 99-109
Campbell, M., H., 1994, An Informational Approach to Preference of Urban Waterscapes, Los Angeles, CA
Chambers, D. W. (1983). Stereotypic images of scientist: The draw-a-scientist test. Science Education, 67(2), 255- 265.
Coad, J., Coad, N. (2008). Children and young people's preference of thematic design and colour for their hospital environment. Journal of Child Health Care, 12(1), 33-48.
Cunningham, C, Jones, M. (1997) A pitch and a swing? An Australian perspective of urban planning and the child, in: R. Camstra (Ed.) Growing Up in a Changing Urban Landscape, pp. 119–130 (Holland: Van Gorcum)
Çukur, D., Delice, E. G. (2011). Designing Space Suitable For Development of Visual Perception İn Preschool Childhood Period. Aile ve Toplum, 12:7, 25-36.
Düzenli T., Mumcu S., Yilmaz S., Özbilen A., (2014). Water Reflections on the Social Dimension of Place: Different Waterscapes and Related Activity Patterns, SDU Faculty of Forestry Journal , vol.1, pp.148-157.
Ergin, Ş. (1982). Çocuğun Oyun Gereksinimi ve İzmir/ Alsancak Semtinde Çocuğa Yönelik Açık/Yeşil Mekân Olanaklarının Artırılması Üzerine Bir Araştırma. Yayımlanmamış Doçentlik Tezi, Ege Üniversitesi: İzmir.
Ersoy, A., Türkkan, B. (2009). Perceptions about Internet in elementary school children's drawings. Elementary Education Online, 8(1), 57-73.
Ertürk, Z., 1979, Tasarım ve İnsan Bilimleri, KTÜ. Mimarlık Fakültesi Yayınları, Trabzon
Falk, J.H., Martin,W.W. and Balling, J.D.(1978). The novel field trip phenomenon: Adjustment to novel settings interferes with task learning. Journal of Research in Science Teaching 15 (2),127–34.
Fisher, J. and M.R. Baron. 1982. An Equity-Based Model of Vandalism. Population and Environment, 5 (3): 182-199.
Fjortof, I., and Sagei, J., 2000. The natural environment as a playground for children: Landscape description and analyses of a natural playscape. Landscape and Urban Planning, Volume 48, Issues 1-2, 20 April 2000, Pages 83-97
Fjørtoft, I. (2001). The natural environment as a playground for children: The impact of outdoor play activities in pre-primary school children. Early childhood education journal, 29(2), 111-117.

Fjørtoft, I. (2004). Landscape as A Playscape: The Effects of Natural Environments on Children's Play and Motor Development. Children, Youth and Environments, 14(2), 21-44.
Francis, C., Cooper Marcus, C. (1992). Restorative places: environment and emotional wellbeing. In: Proceedings of 24th Annual Environmental Design Research Association Conference, March 20-24, 176-182. Boulder, CO; EDRA.
Fröbel, F. (1912). Froebel's chief writings on education. Longmans, Green.
Gharahbeiglu, M. (2007). Children's interaction with urban play spaces in Tabriz, Iran. Visual Studies, 22(1), 48-52.
Gibbs, C. J. (2003). Moral Development & Reality Beyond the Theories of Kohlberg and Hoffman. United States of America : The Ohio State University.
Gibson, J. (1979) The Ecological Approach to Visual Perception (London: Lawrence Erlbaum).
Ginott, H. G. (1994). Group psychotherapy with children: The theory and practice of play-therapy. Rowman & Littlefield.
Gudrun, G., 2001, Water As A Space for Playing And Learning, Presentation at NAPOT-Conference: " Space Odyssey 2001" Exeter, Great Britain.
Günindi, Y. (2012). Environment in my point of view: Analysis of the perceptions of environment of the children attending to kindergarten through the pictures they draw. Procedia-Social and Behavioral Sciences, 55, 594-603.
Hayes, D., Symington, D., Martin, M. (1994). Drawing during science activity in the primary school. International Journal of Science Education, 16, 265-277.
Huang, Shu-Chun, L., 1998, A Study of People's Perception of Waterscapes In Built Environments, Doctor of Phylosophy, Texas A & M Universitiy, Texas
Huizinga, Joan. (Çev: Mehmet Ali Kılıçbay). Homo Ludens. Oyunun Toplumsal İşlevi Üzerine Bir Deneme. 1. Basım. İstanbul, Aynnb Yayınlan, 1995.
Ingleby, D. (1974) 'The Psychology of Child Psychology', in M.P.M. R ichards (ed.) Integration of a Child into a Social World. London: Cambridge University Press, pp. 295–308.
Isaacs, S. (1930). Intellectual growth in young children.
Isbel, T. R., Shirley, C. R. (2003). Creativity and the arts with young children. Canada: Delmar Learning.
James, A., Prout, A. (1997) Constructing and Reconstructing Childhood. London: RouteldgeFalmer.
Jewell, P. (2000). "Measuring Moral Development Feeling, Thinking and Doing". Special Education and Disability Studies. The Flinders University of South Australia.
Johnson, P. (1993). Literacy through the book arts. Chicago: Heinemann.
Kaptan, F. (1999). Fen bilgisi öğretimi. (3. Baskı). İstanbul MEB Yayınları.
Kates, R. W., Katz, C. (1977). The hydrologic cycle and the wisdom of the child. Geographical Review, 51-62.
Kates, R.W., Katz, C., (1977). The hydrologic cycle and the wisdom of the child. Geogr. Rev. 67 (1), 51–62.
Kellert, S. R.(2005). Nature and Childhood Development. In Building for Life:Designing and Understanding the Human-Nature Connection. Washington, D.C.: Island Press,
Kellert, S.R., 2002. Experiencing nature: affective, cognitive and evaluative development in children. In: Kahn, P.H., Kellert, S.R. (Eds.), Children and Nature. Psychological, Sosiocultural, and Evolutionary Investigations. Cambridge: The MIT Press, pp. 117-151.
Kohlberg, L. (1968). Early education: A cognitive-developmental view. Child development, 1013-1062.
Lang, J., 1987, Creating Architectural Theory, Van Nostrand Reinhold, New York.
Leonard, M. (2006). Children' s drawings as a methodological tool: Reflections on the eleven plus system in Northern Ireland. Irish Journal of Sociology, 15 (2), 52–66.
Lester, S., Maudsley, M. (2007). Play, naturally. Play England, 47-49.
Lester, S., Maudsley, M. (2007). Play, Naturally: A Review of Children's Natural Play. National Children's Bureau, London.

Lewis, D., Greene, J. (1983). Your child's drawings… their hidden meaning, London: Hutchinson.
Malchiodi, C. A. (1998). Understanding children's drawings. Guilford Press.
Malchiodi, C. A. (2005). Çocukların resimlerini anlamak. Yurtbay, T. (Çev.). İstanbul: Epsilon
McMillan, J. H., (1984). Research in education: A conceptual introduction. Little, Brown.
Miller, E., Almond, J. (2009). Crisis in the Kindergarten: Why Children Need to Play in School.College Park, MD: Alliance for Childhood.
Montessorı, M., (1963). The Secret of Childhood. Calcuta, Orient Longmons.
Montessori, M. (1964). Reconstruction in education. Theosophical Publishing House.
Montessori, M. M. (1966). The human tendencies and Montessori education. Association Montessori Internationale.
Moore, C., R., (1986). Childhood's domain: Play and place in child development. Biddles Ltd. p. 206. Australia.
Moore, R., C., (2002). Plants for Play: A Plant Selection Guide for Children's Outdoor Environments, MIG Communications, Berkeley, California.
Moore, S. T. (2002). Asperger syndrome and the elementary school experience: Practical solutions for academic & social difficulties. AAPC Publishing.
Moser, G. (1992). What Is Vandalism? Towards a PsychoSocial Definition and Its Implications, United States Department of Agriculture Forest Service, General Technical Report PNW-QTR-293 November, pp. 49- 59.
Nasar, J.L., (1994). Urban design aesthetics: the evaluative quality of building exteriors. Environ. Behav. 26, 377–401.
Nasar, J.L., (2000). The evaluative image of places. In: Walsh, W. Bruce, Craik, K.H., Price, R.H. (Eds.), Person–Environment Psychology: New Directions and Perspectives. L. Erlbaum, Mahwah, NJ, pp. 117–168.
Özdemir, A., Yılmaz, O. (2008). Assessment of Outdoor School Environments and Physical Activity in Ankara's Primary Schools. Journal of Environmental Psychology, 28(3), 287-300.
Parsons, A. (2011). Young Children and Nature: Outdoor Play and Development, Experiences Fostering Environmental Consciousness, and the Implications on Playground Design. Master Thesis. Faculty of the Virginia Polytechnic Institute and State University.
Pestalozzi, J. H. (1951). The education of man, aphorisms. Philosophical library.
Phenice, L.A., Grifffore, J.P. (2003). Young children and the natural world. Contemporary Issues in Early Childhood, 4 (2), 167–171.
Piaget, J. (1926) The Language and Thought of the Child. London: Routledge & Kegan Paul.
Piaget, J. (1951). Principal factors determining intellectual evolution from childhood to adult life.
Piaget, J. (1952). Play, dreams and imitation in childhood.
Pollard, A., Thiessen, D., Filer, A. (1997).Children and Their Curriculum: The Perspectives of Primary and Elemantary School Children.Hong Kong, Typeset in 10/12 pt Garamond by Graphicraft Typesetters Ltd.,.
Rennie, L. J., Jarvis, T. (1995). Children's choice of drawings to communicate their ideas about technology. Research in Science Education, 25, 239-252.
Robınson, K. (2003). Yaratıcılık, aklın sınırlarını aşmak, İstanbul: Kitap Yayınevi.
Rodari, P. (2007). Science and scientists in the drawings of European children. Journal of Science Communication, 6(3), 1-12.
Rubenstein, H.M. (1992). Pedestrian Malls, Streetscapes and Urban Spaces, Wiley, New York
Sadık, F., Çakan, H., Artut, K. (2011). Analysis of the environmental problems pictures of children from different socio-economical level. Elementary Education Online, 10(3), 1066-1080.
Schirrmacher, R. (2002). Art and creative development for young children (4th Edition). USA: Delmar Thomson Learning. ISBN: 0-7668-2408-10X.

Simmons, D., A. (1994). Urban Children's Preferences for Nature: Lessons for Environmental Education, Children's Environments, 11, 3, 28-40.
Sivri, H. (1993). Fiziksel ve Mekansal Çevrenin Çocuk Davranışına ve Gelişimine Etkileri, Çocuk İçin Oluşturulacak Çevrelerde Tasarım Verilerinin Saptanması. Yayımlanmamış Doktora Tezi, Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü: İzmir.
Şentürk, N. (1990). Su Bahçeleri Planlama ve Uygulama Teknikleri Üzerine Araştırmalar, Ege Üniversitesi, Yüksek Lisans Tezi, Fen Bilimleri Enstitüsü
Tapsell, S. M. (1997) Rivers and river restoration: a child's-eye view, Landscape Research, 22(1), pp. 45–65.
Tapsell, S. M., Tunstall, S. M., House, M., Whomsley, J. & Macnaghten, P. (2001) Growing up with rivers? Rivers in London children's worlds, Area, 33(2), pp. 177–189.
Terr, L. (2000). Beyond love and work: Why adults need to play. Touchstone Books.
Tilbury, D. (1994). The critical learning years for environmental education. In R. A. Wilson (Ed), Environmental neducation at the early childhood level (pp.11-13). Washington, DC: North American Association for Environmental Education.
Trafi-Prats, L., Woywod, C. (2013) We love our public schools: art teachers' life histories in a time of loss, accountability, and new commonalities, Studies in Art Education, Vol. **55**, No. 1, pp. 7–17.
Tuan, Y.F. (1977). Space and Place: The Perspective of Experience. University of Minnesota Press, Minneapolis, MN.
Tuan, Y.F., (1978). Children and the natural environment. In: Altman, I., Wohlwill, J. (Eds.), Children and the Environment, Vol. 3. Plenum Press, New York, pp. 5–32
Tunstall, S., Tapsell, S., & House, M. (2004). Children's perceptions of river landscapes and play: What children's photographs reveal. Landscape research, 29(2), 181-204.
Turgut, H., Yılmaz, S. (2010). Ekolojik temelli çocuk oyun alanlarının oluşturulması.
Ulrich, R. (1983). Aesthetic and affective responses to natural environment. In: Altman, I., Wohlwill, J.F. (Eds.), Behavior and the Natural Environment. Plenum, New York, pp. 85–125.
Ünal, M. (2009). Çocuk Gelişiminde Oyun Alanlarının Yeri ve Önemi. İnönü Üniversitesi Eğitim Fakültesi Dergisi Ağustos 2009/ Cilt. 10, Sayı. 2, s. 95-109
Vickers, V.G.,Matthews, C.E. (2002). Children and Place, A Natural Connection, Science Activities,39(1), 16-24,Retrieved from;http://www.eric.ed.gov/ERİCWebPortal/search Wells, N.M. (2000). At Home with Nature: Effects of 'Greenness' on Children's
Ward ,L.,M., Russel, J., A. (1981). Cognitive Set and The Perception of Place, Environment and Behavior, 13 (5), 610-632.
Wells, N. M. (2000). At home with nature: Effects of "greenness" on children's cognitive functioning. Environment and behavior, 32(6), 775-795.
Wells, N.M. (2000). At Home with Nature: Effects of 'Greenness' on Children's Cognitive Functioning. Environment and Behavior. 32(6), 775-795.
White, R. T. and Gunstone, R. F. (1992). Probing Understanding, London: Falmer.
Whyte, W. H. (1980). The social life of small urban spaces.
William, D. (1988). The Moral Child, Nurturing Children's Natural Moral Growth. New York: The Free Pres
William, D. (1999). "The Moral Development of Children". Scientific American. Vol: 281, 74-76.
Wilson, R. A. (1994). Environmental education at the childhood level. Washington DC: North American Association for Environmental Educaiton, 11–13.
Winnicott, D. W. (1971). Playing and reality. Psychology Press.
Wolfe, M., & Rivlin, L. G. (1987). The institutions in children's lives. In Spaces for children (pp. 89-114). Springer, Boston, MA.
Yamashita, S. (2002). Perception and Evaluation of Water in Arid Landscape: Use Photo-Projective Method to Compare Child and Adult Residents' Perceptions of a Japanese River Environment, Landscape and Urban Planning,_62, 3-17.
Yavuzer, H. (2003). Çocuk Psikolojisi. (25. Baskı). İstanbul: Remzi Kitabevi.

Yilmaz S., Düzenli T., Özkan D.G. (2017). Affordances Prımary School Gardens Provıde To Chıldren Wıth 6-7- Year-Old, Journal of the International Scientific Researches/Uluslararası Bilimsel Araştırmalar Dergisi (IBAD) , vol.2, pp.130-141,
Yörükoğlu, A. (2006). Çocuk Ruh Sağlığı. İstanbul: Özgür Yayınları.
Yurtal, F., Artut, K. (2008). Çocuklarda şiddeti algılama biçimlerinin çizdikleri resimlerine yansımaları. Çocuk ve Gençlik Ruh Dergisi, 15 (3), 149-155.
Zentner, M. R. (2001). Preferences for colours and colour--emotion combinations in early childhood. Developmental Science, 4(4), 389-398.
Zube, E. H., Pitt, D. G. & Evans, G. W. (1983) A lifespan developmental study of landscape assessment, Journal of Environmental Psychology, 3, pp. 115–128.