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The Effect of a Nature Camp on The Children's Conceptions of Nature*

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Abstract

In this study, a nature camp which provides authentic learning opportunities for children was conducted. Twenty-four 4th and 5th graders (9 girls, 15 boys) participated to the camp. The camp program started with observations in the forest nearby. More focused observations were also made. Children discussed their observations with their friends and scientists. A questionnaire was applied at the beginning and end of the camp. The results showed that the nature camp program was effective in extending the children's conception of the nature by including both living and non-living things. Most of them started the camp with a conception of the nature which consisted of only living things whereas only four children left with this conception at the end. Biological aspects of the nature also increased. Children generally stated that living or non-living things exist or live together at the nature, but relationships between them were noticed by fewer children.

Keywords: nature camp, nature education, conception of the nature, children

Introduction

Nature is always important for human and has different meanings for different people such as a source, an Arcadia, and a social construction (Lijmbach, Van Arcken, Van Koppen, & Wals, 2002). Some of the people recognize nature as a source for life. Some others define it as an Arcadia. Some people also propose that the nature is a social construction. People's conception of the nature is diverse and needs further exploration.

Children learn many concepts related to the nature and natural processes. Their conception of the nature would affect their learning of these concepts. Thus, children's conception of nature was a concern for researchers and searched in a few studies. An interesting study (Wilhelm & Schneider, 2005) conducted with diverse urban youth (age seven to fourteen) interviewing on nature photographs that 29 participants had taken. They raised eight

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primary themes in participants' definition of the nature: process, content, locality, origin, life, beauty, longevity, and by-products. The nature as process theme included growing, feeding others, eating, dying, changing throughout the day, and its interdependence with nature.

Content of the nature theme was the largest theme and included subthemes: flora, fauna, insects, geological features, atmospheric features, open space, people, and by-products. Flora was the most common theme and trees were the most common examples of flora followed by leaves, grass, general plants, and flowers. Birds were the most commonly mentioned animal under fauna theme. The geological theme included water, rocks, soil, sand, and land features, with water mentioned most frequently. Atmospheric theme included sky at most and followed by clouds, sun, rain, snow, wind, and rainbow. Open space included fields, playgrounds, yards, and neighborhoods. People were mentioned by only eight participants. By-product items were the items made from the nature such as wood, clothes, garbage, sidewalk, fur, and statues. Urban youth participants were also asked what the nature was not. Four themes raised from their responses: built, social, open space, and human influenced.

Cobern, Gibson, & Underwood (1999) studied 16 ninth graders' conceptualization of the nature in their everyday thinking. They conducted interviews with the students about the nature and applied interpretive analysis of the narratives. They concluded that the nature was conceptualized as a composite of a number of different perspectives: aesthetic, religious, conservationist, and sometimes scientific. In their discussions of the nature, most of the students were volunteered little school knowledge about science and did not elaborate them.

Some studies searched both conceptions of the nature and environment (Payne, 1998). Payne searched fourteen 6th graders' conception of the nature in a philosophy course through informal questioning process about practical interests and issues confronting children in their daily lives. Most children conceived the nature as living and non-living things existing naturally in the external environment. Only one child included human. Minimal human influence was identified as a primary characteristic of being natural. Almost all of the students thought that the nature and environment have the same meaning. But, half of them included human made objects in their illustrations of environment. Payne concluded that concepts of the nature and environment were not fully developed in children's mind.

Another comprehensive study about children's conceptions of the nature is Watson (2004) which was a master thesis. Watson conducted an ethnographic and phenomenographic study at a nature camp with fourteen children at different ages from seven to fifteen. Data were collected by participant observation and semi-structured interviews. Watson organized data around seven major categories:

- Attributes which describe relative complexity (big, abundant, unorganized, diverse, and changes)
- Attributes which denote agency (gives, relationships, friend, uncontrollable, purposeful, alive)
- Attributes which denote value (beautiful, interesting, important, simple, not perfect, amazes)
- Attributes which relate to, or are based on, concepts of human manipulation of the nature (Physical-not built or owned, Cognitive-whatever you want it to be, is science)
- Sensations (physical sensations, emotional sensations)
- A place (everywhere, city-based, camp-based, outdoor-based)
- An experience or activity (alone and with others; with others, never alone, through activities, through activities at camp)

If we synthesize the research on the nature concept, the following points would be proposed. Although children conceptualized the nature differently, most of their conceptions were positive. Although categorization of the data was different in each of the qualitative studies, there were some similarities. The children conceptualize the nature as a place mostly consisting of living things. Human is less related to the nature in children minds and if they relate human, they mostly related in a negative way. Nature is not only a scientific concept for children; it has also emotional and aesthetical aspects.

Rationale for the Study

Interestingly, most of the previous research on children's conception of the nature was one-time determination of the conceptions. We could locate only two studies (Marion & Mary, 1994; Dettmann-Easler & Pease, 1999) in which effect of residential nature camps' effectiveness was searched. Dettmann-Easler & Pease studied effectiveness of residential nature camps in fostering positive attitudes toward wildlife. They found that students had significantly more positive attitudes toward wildlife after residential programs than they did after an in-class wildlife program. Marion & Mary (1994) described a two-week nature camp program and reported that it raised campers' self-esteem, increases their interest in, and curiosity about the nature. Watson's (2004) study conducted at a camp, but searched for children's conceptions of the nature through observations and semi-structured interviews throughout the camp. It was not a pre- and post-camp determination of children's conceptions of the nature.

As science educators, we try to introduce the nature to children and teach many concepts and processes about the nature. Environmental education at residential nature camps is applied worldwide, but their effectiveness on developing children's conception of the nature was not searched at all.

Research Question

In this study, a one-week residential nature camp was held with a group of 4th and 5th grade children and effectives of the camp program on children's conception of the nature was searched through pre- and post-camp questionnaires and semi-structured interviews. Thus, the research question searched in this study was 'what was the effect of a one week residential nature camp on the children's conception of the nature?'.

Method

Camp Program

Nature-based environmental education was done at the camp. The camp program was developed by the researchers. The camp program was summarized in Table 1. The camp program consisted of three main blocks of sessions; morning, afternoon, and evening sessions. It included a number of observation sessions at the nature at morning and afternoon sessions, and evaluation of the day and ecology games or social activities in the evenings. In the observation sessions, the children observed various plants, animals, and other living and non-living organisms in their habitats at the nature. The observations were sequenced from close environment to distant environments and also sequenced from big organisms to small organisms. Each kind of activities was described below.

Ecosystem sessions. Three sessions were allocated for teaching ecosystems. First session was observing the ecosystems around the camp site including forest ecosystem and ecosystem in a puddle. The biology professor taught ecosystem concept based on their direct observations. Second session was on lake ecosystem. The children and the camp team went to a big lake close to the camp site by bus. The same biology professor taught lake ecosystem by direct observations at many sites around the lake. Third session was distant

ecosystems. The children watched documentary films about rainforests, deserts and poles. They compared different ecosystems at the end of the session.

Observation sessions. Four observation sessions were included in the camp program. First session was a field trip around the camp site. The camp team prepared approximately ten observation stations in the forest. The observation stations were different trees, different plants including flowers, butterflies, frogs, and puddle. The camp team put a sign on each station. The sign also included the questions to guide children's observations. The children were asked to form four-member groups. Each group was guided by a science educator in the camp team throughout their observations. Six groups were formed and each group started from different stations to save time, but each group visited every observation station and performed the observation task required in each station. They recorded their observation notes on their notebooks in each station and passed to another observation station. They shared their observations at the end of the session.

The following observations were specific observation sessions. Second observation session was on birds. The children worked in small groups with their guide and observed birds around the camp site. They again shared their observations at the end of the session. Third session was observing soil and rocks. They observed different rocks around the camp site. They also observed soil at different depths of a hole which was opened for an unknown reason. The hole was used a learning opportunity for observing and learning about soil. They compared soil by observing by their magnifying glasses and stereo-microscopes. Fourth session was observing in detail session and consisted of observation of ants, insects and worms under the stereo-microscope and leafs under the microscope. They made detailed observations by using technology.

Ecology games. There were three sessions regarding ecology games in the camp program. The first session was a card game. Each group chose a card including information about an animal. The group discussed which animal is it and explained their reasoning to other groups. The second session was a game which simulated carrying capacity of deer habitat. The number of deer in each round of the game was recorded, graphed after the game and discussed. Carrying capacity was taught based on the graph. Third session was eco-system jury. A jury was formed by the children and they behaved as if they were in the court discussing if the Abant Lake should be a national park. The Abant Lake was close to the camp site and observed in lake ecosystem session. It is a big lake which had bio-diversity around the lake. It is included in natural park statue because of the richness of the ecosystem in and around the lake. But it is not included in national park statue. National park statue is the highest statue and they were like natural reservation areas. If Abant Lake is included in the national park statue, all hotels around the Abant Lake will be demolished. This is a local socio-scientific issue which was also discussed by local stake holders.

Interdisciplinary sessions. Two sessions were interdisciplinary which related the nature to other areas. First session was mathematics in the nature session. The children collected pine cones and flowers around the camp site and a mathematic educator taught Fibonacci numbers and golden spiral on them. The second session was the nature and art session. In this session, the children designed a photograph frame with natural materials that they collected in the field trip. The session was monitored by an art educator. Then, they listened to 'four seasons symphony' of Vivaldi and talked about four seasons in the symphony.

Participants

Participants were 24 children from different elementary schools. Nine of them were girls and 15 of them were boys. They were at 4th and 5th grades. They were ten or eleven years old.

Camp Staff

The camp was conducted by a team of science educators including researchers of the study. The coordinator of the camp was an associate professor of elementary science education. There were five graduate students doing masters study on elementary science education. There was a biology professor who taught lake eco-system. He left the camp after his session. But other members of the camp team stayed at the camp site throughout the camp. They stayed in the same houses with children. Each one of the camp team stayed with four or five children in the same house in order to be in close contact with children and watch for their safety.

Camp Site

Camp site was a village town consisted of duplex houses each of which could accommodate four or five people. It was nearby a forest and was close to a lake. The camp site had biodiversity and thus supported children's observation of many living and non-living components of the nature at their context.

Questionnaire

In order to find out the effectiveness of the camp program, a questionnaire developed by the researchers applied at the beginning and at the end of the camp. To understand the children's ideas better, individual semi-structured interviews on the questionnaires were conducted immediately after the children filled out the questionnaire. The questionnaire included ten open-ended questions about the nature and some other ecological concepts. Data from one question about the definition of the nature and interview data for this question are presented in this paper. Data analysis was interpretive analysis (LeCompte & Preissle, 1993). The first researcher coded the data and discussed them with the second researcher. Then, they inductively categorized the codes until they were satisfied with the organization of the data for modeling children's conception of the nature. Both researchers worked together during data analysis and negotiated their ideas continuously. Thus, the agreement between them was always sustained by negotiation. The same methodology was applied for both pre- and post-camp data and then the results were compared and interpreted.

Results

The coding scheme of the data was summarized in Table 2. Analysis of children's definitions of the nature resulted in two major categories such as biological and non-biological aspects. Biological aspects were the components of the nature and relationship between components. Non-biological aspects were aesthetic aspects, emotional aspects, health, and activities at the nature. Each category will be described and pre- and post-camp data will be compared in separate sections.

Biological Aspects

Most of the children described the nature by stating its components at both beginning and end of the camp. Most of the children indicated existence of these components together or just stating that these components live together at the nature in their definition whereas only some of them indicated the specific relationships among them.

Components of the nature. At the beginning of the camp, most of the children defined the nature by only living things. They sometimes used 'living things' as a general term without specifically indicating the name of the animals or plants as exampled in the following quote:

> *Nature is a place where living things live together, being fed by other living things (H.B.B).*

On the other hand, some children specifically stated animals and plants in their definition. An example for such definitions is as follows:

> *I think the nature is a place where the living things can live. These living things are plants, animals and people (E.N.).*

In such definitions, plants were more frequently stated than animals. In some definitions 'plants' was used as a general term, but in others plants specifically named such as trees , flowers, grass, and green. Green is used as a general term for green plants in Turkish. Trees were the most frequently stated plant in children's definitions of the nature. The pattern was similar for animals. In some of the definitions 'animals' was used as a general term, but in some of the definitions, human and birds were specifically stated. Human was coded into animal category because of the biological classification.

Less children stated both living and non-living components of the nature in their definitions. They used concrete examples of air and water such as clean air, lakes, sea, and rivers.

> *Nature is a place which has lots of green plants and many living-things. Trees, lakes, animals, plants, rocks, humans, e.t.c exists at the nature. (H. O. pre-test)*

At the end of the camp, almost all of the children included both living and non-living components of the nature in their definitions. An exemplary quote for such definitions is the following:

> *According to me, nature is a place on which living things and air, water, soil, and stones exist together. I mean plants and animals by living things. (Y.Ç.)*

Living components were more varied and frequent as it is expected. Plants and animals were most frequently stated and even microscopic organisms and fungus emerged in the children's definitions at the post-test. Although they used animals as a general term, various animals were specifically given in their definition such as human, birds, ant, squirrel, insects, chicken, etc… Similarly, plants were used as a general term and sometimes specified as trees, flowers, and grass.

Nonliving-things mentioned in children definitions were air, water, and soil. Air was usually used as a general term, but three children specifically stated oxygen in the air. Water was used as a general term by five children whereas three children specifically stated lakes, sea, and puddles. Soil and mountains were also emerged at the end of the camp.

There were only four children left defining the nature by only its living components at the end of the camp. They used plants and animals as general terms, only a few of them stated specific plants such as trees, flowers, and grass. Only one child stated specific animals which were ant, birds, dog, and squirrel.

One child went further in his conception of the nature and stated microscopic organisms and fungus in his definition of the nature;

> *I think the nature consists of living and non-living organisms which are plants, animals, fungus and microscopic organisms. When I think the nature, green, forest, trees and clean air e.t.c. comes to my mind.(A.A.).*

Two children indicated ecosystems in their definition of the nature. Although they learnt about eco-systems during the camp, only two of them related eco-system to the concept of the nature.

> *Nature is a place where living and non-living organisms live together as an eco-system. (B.Ç.)*

Relationship between the components. In children's definition of the nature, there were also expressions about how these components relates to each other in the nature in addition to

the components. Nineteen children indicated relationships between components at the beginning of the camp whereas all of them indicated relationships between components at the end of the camp. In a few definitions at both beginning and end of the camp, it was stated that the components of the nature exist at the nature together. In such definitions, there was not any indication of the relationships between these components other than existing together:

Nature is a large place in which plants and animals exist. (B. O. pre-test)

On the other hand, in some other definitions, there was implication of relationship between the components. There were 17 statements indicating a relationship between the components at the beginning of the camp and it increased to 21 at the end of the camp. These relationships were further classified as 'living-thing to living-thing relationship' and 'non-living to living-thing relationship'. Non-living to living-thing relationship was mentioned by only one child stated as 'plants grow by the rain'. On the other hand, living-thing to living-thing relationships were relationships between plants and animals and more noticed by the children. The frequency of living-thing to living-thing relationships was 16 at the beginning of the camp and increased to 20 at the end of the camp. Among these relationships, almost half of the relations at both beginning and end of the camp stated in general as 'living together' as in the following quote;

Nature is a place where people, animals, and plants live together. (H.B.B.)

In other half of the definitions, specific relationships between the components of the nature were indicated such as 'trees provide oxygen', 'animals eating plants', 'plants provide shelter for animals', and 'animals hunt each other'. An exemplary quote is as follows:

I think the nature is a place where plants and animals live. It is a place which has green and beauty. It provides shelter for animals. Herbivorous animals eat plants (E.G.).

This child stated two specific relationships as 'plants provides shelter for animals' and 'herbivorous animals eat plants'. The most frequently stated living-thing to living-thing relationships were 'trees provide oxygen' and 'plants providing shelter for animals'.

Table 1. *The nature camp program*

Hours	*1st day*	*2nd day*	*3rd day*	*4th day*	*5th day*	*6th day*	*7th day*	*8th day*
Morning Sessions (9am-13pm)		Pre-test application (questionnaire about the nature, and interviews on the questionnaire)	A field trip around the camp area (observations at many stations such as trees, plants, butterflies, frogs and puddle)	Ecology Games II (a simulation game about habitat of deer and its carrying capacity. Providing the data from the game and graphing)	Ecosystems around the camp (visiting forest, puddle, and teaching ecological concepts at the nature)	Distant Ecosystems (watching documentary about rainforests, deserts and poles) Observation of ants and their behavior	Observing birds (observing birds around the camp area) Sharing and discussing the role of birds in eco-system)	Post-test application (questionnaire about the nature and interviews on the questionnaire)
Afternoon Sessions (3 pm-7pm)	Coming to the camp	Mathematics at the nature (Fibanocci numbers, golden spiral)	Sharing and discussing the field trip observations	Nature and Art (designing a photograph frame with the materials from the field trip and listening to four seasons symphony of Vivaldi)	Eco-system of a lake (observing biological diversity in and around the lake)	Sharing and discussing the role of the ants in the eco-system Observing soil (observation of soil and rocks by magnifying glass and stereoscope)	Observing in detail (observing ants, insects, worms under the stereoscope and leafs under the microscope)	Presenting learning products constructed during the camp to parents Certification
Evening Sessions (8pm-11pm)	Welcome party	Evaluation Getting rest	Ecology Games I (guess which animal is it?) Evaluation Getting rest	Forming small groups Evaluation Getting rest	Creative Painting (painting a T-shirt) Evaluation Getting rest	Sharing and discussion of observations made during the day Evaluation Space Observation (observing constellations)	Ecology Games III (Eco-system jury, Discussing whether Abant Lake should be a national park or not) Evaluation Party	

Table 2. *Categorization of the data about children's conceptions of the nature at the beginning and end of the camp.*

Biological Aspects	Components (24)**(24)**	Only living things(15)**(4)**	plants (trees(6)**(3),** green(6), plant in general(6), flowers(2)**(1)**, grass(1)**(1)**), animals(human (8), animals in general(5), birds (1)**(1)**, **ants(1), dogs(1), squirrel(1)**), all living things(7)	
		Both living and non-living things(9)**(20)**	Living components	plants (trees(10)**(14)**, green(2)**(4)**, grass(1)**(1)**, flowers(1)**(2)**) Animals (animals in general(8)**(14), human(6), birds(4), ants(1), squirrel(1), worm(1), insects(1), chicken(1), cow(1)) (microscopic organisms(1), fungus(1))**
			Non-living components	clean air(3), oxygen(2)**(3)**, lakes (2)**(1)**, sea(1)**(1)**, rivers(1), **air(6), water(5), soil(5), mountains(5), puddles(1)**
	Relationship between components (19)**(24)**	Just co-exist (2)**(3)**		
		Related to each other (17)**(21)**		General-living together (10)**(10)**
			Living-thing to living-thing interactions (16)**(20)**	Specific relations (trees provide oxygen(4)**(3)**, animals eating plants (1)**(2)**, **shelter for animals(4)**, animals hunt each other (1), **affect each other(1)**
			Non-living to living-thing interactions (1)**(1)**	plants grow by the rain (1)**(1)**
Non-biological Aspects	Aesthetic aspects (9)**(3)**	a beautiful place(6)**(3)**, a pretty place(1), providing scenery (1), places which color the world(1)		
	Emotional aspects (9)**(6)**	silence(1)**(1)**, comfortable life(1)**(1)**, adventure(1)**(1)**, enjoyable(1)**(1)**, joyful(1), peace(2)**(2)**, happiness(2)		
	Health and clean (4)**(4)**	to be healthy(3)**(2)** and clean environment(1)**(2)**		
	Activities at the nature (4)**(4)**	picnic (2)**(1)**, camping(1), resting at shade(1), **riding bicycle(1), climbing mountain(1), nature sports(1)**		

Note: Frequency of codes shows children's each statement, frequency of categories shows each children's items in their definitions. Bolded codes and numbers represent post-test data.

Non-biological Aspects

There were also non-biological aspects stated in the children's definitions of the nature. Non-biological aspects were similar at the beginning and end of the camp. All of the non-biological aspects of the nature stated by the children were positive indicating that they have an innocent and a positive conception of the nature. They were categorized into aesthetical aspects, emotional aspects, health, and activities.

Aesthetic aspects. Aesthetic aspects of the nature were mostly indicated in the children's definitions of the nature. At the beginning of the camp, they indicated that the nature is a beautiful and a pretty place, provides scenery, colors the world and makes the world beautiful. These children think the nature as a beautiful place which colors the world.

> *To me, the nature colors our world and adds beauty. Nature is a place which has trees and green. Beautiful places in the cities would also be the nature. (V. B. pre-test)*

At the end of the camp, aesthetic aspects about the nature were less and about the beauty of the nature.

> *Nature is beauty. It is a place which is covered by trees. (O. S. post-test)*

Aesthetic aspects of the nature were less stated at the post-test, since children talked more about biological concepts about the nature after the camp.

Emotional aspects. At the beginning of the camp, emotional expressions emerged from the definitions were happiness, peace, joyful, enjoyable, adventure, comfortable life, and silence.

> *Nature is a place which is green and has birds and animals. It is silent and provides scenery. It is also adventurous when you climb mountains. (O. S. pre-test)*

At the end of the camp, emotional aspects were peace, enjoyable, adventure, comfort, and silence.

> *Nature is a place which has trees. It is peaceful, silent, and adventurous. (O.S. post-test)*

As it is evident in the quotes, emotional aspects were very similar at both beginning and end of the camp.

Health. At the beginning of the camp, a few children defined the nature as to be healthy and clean environment.

> *I think about forest when I hear the nature. Because, forests are healthy places for humans. Living at the nature is great. There would be differences between a human living in a city and another human living at the nature. The one living in the city would be more nervous than the one living at the nature. Because, there is less oxygen in the cities. But, people living at the nature are more peaceful and happier than people living in the cities. (İ. İ. pre-test)*

At the end of the camp, a few children defined the nature as to be healthy and clean environment.

> *Green color comes to my mind when I hear the nature. Then, I think about trees, mountains, and animals. In other words, a clean environment which has not any dirt. (T. Y. post-test).*

Activities at the nature. At the beginning of the camp, some activities done at the nature emerged in the definitions were going for a picnic, camping, and sitting in the shade.

At the end of the camp, activities done at the nature were picnic, riding a bicycle, nature sports, and climbing a mountain.

Activities at the nature were also similar at the beginning and end of the camp and all of them were human leisure activities.

Discussion

The purpose of this study was to determine the effect of a one-week residential nature camp on children's conception of the nature. When the living and non-living components stated at the beginning and end of the camp were compared, it is evident that children's conception of the nature extended. The number of the children who included both living and non-living components in defining the nature increased from beginning to the end of the camp. Furthermore, they also included soil, a critical component of the nature, in their definitions at the end of the camp. Living and non-living components stated at the end of the camp also enriched.

The results also showed that children described the nature mainly by biological aspects as components and relationship between the components. Children thought that plants were more basic in the nature than animals, and also human. Components of the nature were mostly living things which includes plants, animals, and sometimes human. Human were least mentioned in the children's definitions of the nature whenever they talked about human, they mostly indicated doing some recreational activities at the nature.

Similar results were reported in earlier studies. 'components of the nature' category in this study was named as content of the nature in Wilhelm & Schneider (2005) study. Plants (flora) were most common and symbolized by trees in both studies. Animals (fauna) were the next and symbolized by birds. Humans were mentioned less in both studies. 'Geological' theme in Wilhelm & Schneider's study corresponded to 'non-living' category in this study and water was the most common in both studies. Theme of 'processes' in Wilhelm & Schneider's study somewhat corresponds to 'relationships between components' category in this study. The 'relationships between components' category was coded in further detail in this study and living-thing to living-thing relationships were more than non-living to living-thing relationships. The 'relationships between components' category in this study and 'processes' theme in Wilhelm & Schneider's study were the second common statements in the children's expressions about the nature. Aesthetic aspects also emerged in both studies, but named 'beauty' in Wilhelm & Schneider's study.

The study presented in this paper was similar to Watson (2004) study which was also conducted in a residential nature camp, but Watson determined the children's conceptions of the nature throughout the camp and thus there was no comparison from beginning to the end of the camp. The organization of data was also different and makes the comparison of two studies difficult. 'Nature is alive' and 'nature is relationships' categories were classified under 'attributes which denote agency' category in Watson's study. 'Nature is alive' category corresponds to 'components of nature' category in this study which also mostly included living things. But, 'nature is relationships' category in Watson's study, implies nature as a friend and nature as a family, and thus they were more about emotions and communities.

Although it was named with the same words, this category is very different from 'relationships between components' category in this study which implies the relationships between plants and animals. 'Nature is beautiful' was classified under 'attributes which denote value' category is similar to 'aesthetic aspects' in this study. 'Sensations' category in Watson's study is very similar to 'emotional aspects' category in this study. We did not code a place category in this study, but as it is evident from the exemplary quotes given throughout the paper that most of children definitions of the nature started with 'nature is a place …'. 'Experience and activities' category in Watson's study is very similar to 'activities' category in this study. In short, the children's conceptions of the nature was found to be similar in two studies, but organized in different coding schemes. There were other categories which did not emerge in this study indicating that Watson collected more thorough data from children regarding their conception of the nature.

Although the classification of the data is different in previous studies, there are basic elements of the children's conception of the nature. Nature is not only a biological concept for children, but it also has aesthetic and emotional aspects to a great deal. Children's conceptions of the nature reported in the literature were mostly positive. Plants were basic elements of the conception of children, and then came animals, and human was the least. When they stated human while they were talking about the nature, they were mostly indicating recreational activities. They indicated non-living things such as water, soil, and air less than living things. They mostly stated non-living things as concrete examples at the nature such as mountain, river, clouds, e.t.c.

Our categorization of the data is somewhat more detailed in the part of relationship between the components of the nature and adds up to the literature that children noticed living-thing to living-thing relationships more than non-living to living-thing relationships. Most of the living-thing to living-thing relationships were the benefits of plants for animals and human such as providing oxygen, food, and shelter for animals. If this finding is combined with the finding of plants being stated most frequently than animals and a lot more than human, it would be concluded that the children's conception of the nature was largely based on plants and plants' relationship with animals and human. They stated interaction between animals such as hunting each other less than plant oriented relationships.

They talked about some non-living things in the nature while they were talking about the content or components of the nature, but they did not relate non-living things to living-things. Only one child stated that 'plants grow by the rain' indicating the relationship between plants and water. They mostly stated concrete examples of non-living things such as rivers, seas, mountains, fields, e.t.c. and they were stated as a part of scenery.

Conclusion

The nature camp provided interaction with the nature for a week. The camp program was effective in extending the children's conception of the nature by including both living and non-living things. Most of them started the camp with a conception of the nature which consisted of only living things whereas only four children left with this conception at the end. This was the most positive and clear effect of the camp program. Observing both living and non-living organisms at the nature extended their conception of the nature. Biological aspects of the nature increased at the end of the camp indicating that children learned more biological concepts at the camp. It was concluded that the camp program was effective for children to develop more comprehensive and appropriate conception of the nature.

The children generally indicated that the components of the nature exist or live together at the nature. Most of them did not state specific relationships between the components. Although number of the children noticed the interactions at the nature increased slightly from beginning to the end of the camp, it was less than expectation of researchers. Realizing co-existence or living together would have been easier and basic than understanding the interactions between plants and animals or interaction of both with water, soil, and air. One-week experience at the nature would not be enough to reach that level of conception. But, camps would not be longer because of the pedagogical aspects such as being away from the family and being expensive. Thus, longer camps would not be recommended, but similar the nature camps would be offered for children at different years.

Children participated this study was at 4th and 5th grades who were only 10 and 11 years old. This was their first camp experience. Thus, it would be reasonable not to have a comprehensive and complex conception of the nature. But, the difference in the data from beginning to the end of the camp indicated their development in understanding the nature.

Further research would be developing camp programs which include more observation of the interaction of components of the nature, it is also recommended to more reasoning activities to help children think more about the interactions at the nature.

Since this is a one time, small size (24 children) study, it needs to be repeated before any type of generalizability can be established.

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