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RESEARCH ARTICLE

Teaching Scientific Concepts by Telling a Story in Preschool Period

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Abstract

It is a fact that your need for clean energy sources is growing every day. The preschool period is critical to gaining many skills. Learning of renewable energy in early stages will be an effective way of raising consciousness in terms of education. The aim of this research is to examine the effect of using stories in teaching scientific concepts in preschool period, which is effective in the scientific concepts of children it is about whether learning has been carried out and what children have depicted about the concept they have learned is related to the concept. The research was done in the 2021–2022 fall semester with 40 children belonging to the 5- to 6-year-old group in the children's ÇOMÜ Kres and Kindergarten of Çanakkale Onsekiz Mart University. In the first stage of the research, children were asked to draw pictures about renewable energy. Afterwards, semi-structured interviews about renewable energy were conducted with the children. One week after reading the story, the children were again asked to draw pictures about renewable energy. After a while, children were asked to draw images of renewable energy again. The analysis showed that before the educational intervention children had no knowledge of renewable energy sources except a few children. The findings revealed that the drawings made by the children at the end of the study were different from the ones before the research. The pictures made by children express the concepts related to renewable energy. In addition, it was observed that the children defined renewable energy and created their own examples.

Keywords: Preschool period, renewable energy, teaching by storytelling

Introduction

Energy is an important factor in the development of countries' economy and sociological progress. In recent years, developed countries have been increasingly less dependent on fossil fuel sources such as oil, gas, and coal and are focused on the use of low carbon energy sources, especially renewable energy sources, to reduce carbon emissions released to the environment (Devine-Wright, 2011, 2013). Renewable energy is a reusable, naturally replaceable, and sustainable energy source (Çelikkaya, 2017). Some of the natural renewable energy sources are solar, wind, biomass, geothermal, and wave and water energy (Daugherty & Carter, 2010). Renewable energy sources are capable of eliminating the exhaustible and environmental pollution problems caused by non-renewable energy sources. Wind energy from renewable energy sources has the widest area of use. In addition, it is the most widely used source in power generation and in meeting the demand for electricity (Karagül & Kavaz, 2017). According to the International Energy Agency (IEA, 2013) data, it is estimated that by 2050, 18% of the electricity used on earth will be provided by wind energy. The importance of the need for renewable energy sources is increasing day by day. For this reason, children should be taught the concepts related to this subject effectively in the early stages. The preschool period is a critical period for achievement of many skills. In this period, using different learning methods, children's attention can be drawn to a specific topic, resulting in a permanent track change in the subject they will learn and increased awareness. Individuals who are aware of renewable energy sources are sensitive to the correct and effective use of energy (Yenice & Tunc, 2018). If the learning of attitude and conceptual information on individuals about renewable energy resources can be developed effectively, individuals will gain positive attitude and behaviors and efficient use of renewable energy resources will be achieved (Genç & Akilli, 2019). In the preschool period, which is the period that is most open to learning, the activities designed to meet the developmental characteristics of children are seen as the perfect laboratories to solve problems, develop different thinking skills, communicate, and use their senses for questioning. At the same time the activities are designed openly to nurture the curiosity of children and encourage them to observe (Greenfield et al., 2009).

The appropriate methods and techniques used to teach abstract concepts or difficult-to-understand concepts in the preschool period have a facilitating effect on the teaching of science topics (Uyanık Balat & Önkol, 2013). Research showed, applied activities of preschool teachers are seen to be dominated by the game (24.83%), Turkish (17.64%) and art activities (13.07%), while science activities (4.57%) are less preferred (Kiliç et al., 2020). However, science activities allow learning and applying new concepts, making observations, distinguishing similarities and differences, and comparing different situations. In addition, scientific stories also support children in terms of providing opportunities for speech and supporting language and literacy skills (Brenneman

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& Louro 2008; Gelman et.al., 2009; Greenfield et al., 2009; Nayfeld et al., 2009; Sackes, 2014). And the often used story reading activity in Turkish activities is an opportunity to expose children to terms and concepts that are not encountered in daily rhetoric at home or in preschool environments (De Temple et al., 2003). During story readings, children use cognitive processes, recognize characters, watch the plot, and make deductions. They synthesize and predict between their pre-information and new learning information and apply them to the construction of meaning within the story (Mantzicopoulos & Patrick, 2011; Paris & Paris, 2003). Interactive storytelling is defined as a way of teaching children effectively through conversations about the book, with the teacher asking questions or commenting on the subject (Hindman et al., 2012; Milburn et al., 2014). Reading a storybook is a regular activity in preschool classes and has many benefits for early learning (Dickinson & Tabors, 2001). Reading experiences shared through the use of printed storybooks have a positive impact on the vocabulary of children (Gerde & Powell, 2009; Sénéchal & Cornell, 1993) and understanding skills (Hoffman & Paciga, 2014).

In order to facilitate the exposure of young children to science concepts and to improve their science skills in meaningful context, the use of children's art books is increasingly important (Banister & Ryan, 2001; Kelemen et al., 2014; Mantzicopoulos & Patrick, 2010; Saçkes et al., 2013). Stories encourage interest in researching science, which leads to positive attitudes toward science (Brochure & Rearden, 2006; Mantzicopoulos & Patrick, 2011; Stinner, 1995). Scientific stories are actually a way of finding solutions to the simple daily life problems that we face. With this method, students can sometimes explore a scientific concept and a scientific event for this concept and discover the experiences of a scientist (Şen Gümüş, 2009). During this discovery, children naturally have limitless imaginations to feel as part of the story, creating a series of experiences that make it easier to realize the projected gains.

The field article shows that the use of the story as an effective tool for learning science concepts and also promotes emotional development and contributes positively to science education (Bruner, 1994; Hadzigeorgiou, 2016; Klassen, 2010; Rule et al, 2008) and cognitive and intuitive participation (Avraamidou & Obsborne, 2009; Bruner, 1994; Ellis, 2004; Kokkotas et al., 2010; Lehane & Peete, 1977; White & Frederiksen, 1986).

As a pedagogical tool in science education, the use of the story has been used more in recent years. Research shows that using stories in science teaching will increase the effectiveness of developing children's understanding of scientific concepts and nurturing their positive attitude toward science (Arya & Maul, 2012; Erten et al., 2013; Hadzigeorgiou, 2016). According to Yılmaz (2013), scientific stories are a method of finding solutions to common problems in daily life. According to Coşkun (2012), science concepts are conveyed to students through scientific stories. Story-based science education is a topic of increasing interest in research. However, most of the research is done in primary school, middle school and high school. Research focuses less on preschoolers. However, it is thought that teaching scientific concepts through stories enriched with visuals in the preschool period, when academic foundations are laid, will provide permanent learning. Because children at this age have more difficulties in understanding abstract concepts than children in primary or high school. At the same time, at the time of academic foundations, it is thought that the teaching of scientific concepts through image-enriched stories will provide permanent learning. According to Ødegaard (2003), the narrative method is an interdisciplinary and problem-based educational approach and encourages students to learn through discovery, thought, and movement. Polat (2011) has stated that using scientific stories as a measuring tool can determine students' views on the nature of science. Similarly, Erten et al. (2013) stated that scientific stories have changed students' perceptions of the nature of science. The sense of curiosity in the story and what happens in the new story is that the students' interest is fully drawn into the course and brought them to the course (Coşkun et al., 2015). In the preschool period, Koliopoulos and Constantinou (2012) showed that teaching the energy chain model to children between the ages of 5-7 is not just a cognitive teaching, it will also be done through a story. Papadakis and Kalogiannakis (2017), in their study on teaching magnet concept based on story reading activity, concluded that children have much more knowledge about magnets and their properties after reading stories. Altun (2019) in his study of teaching the Moon concept through reading a storybook for preschool children said that the activities carried out through storytelling helped children understand the world around them. Likewise, Walan and Enochsson (2019) found that the combination of storytelling and drama in their search is a teaching strategy with positive potential when it comes to teaching children science. In another study for preschool kids by Handson and Paiewonsky (2020), the fantastic information embedded in the stories support children in biology and physics. It is thought that this study will draw attention to the use of stories in the teaching of scientific concepts in the preschool period. In addition, the concept of renewable energy will be important for children who will be the light of the future, because it is the most important topic to focus on today and in the future.

The purpose of this research is to teach scientific concepts by storytelling in the preschool period. The following questions have been sought for this basic purpose:

Before the story:

1. What information does the children have on renewable energy sources?
2. How do the children illustrate what children think of the renewable energy source before the story is read?

After the story:

1. How did children visualize renewable energy sources after reading the story?
2. Is teaching of scientific concepts with stories useful in learning concepts?

Methods

Model of the Research

This research was conducted with a qualitative approach to determine the effectiveness of the scientific concepts and teaching of preschool children. There has been research on whether children have any benefits in teaching scientific concepts supported by scientific stories, how children are depicting scientific concepts, and whether children have learned effectively about scientific concepts. According to Negrete and Lartigue (2004), the method of storytelling is recognized by many authorities as a remarkable and valuable resource. According to Ødegaard (2003), storytelling is an interdisciplinary and problem-based educational approach and encourages students to learn through discovery, thought, and movement. In this regard, the study of the situation is based on qualitative research methods. According to Stake (1995), case studies are a pattern in which one action, program, or process or one or more individuals are analyzed in depth, especially in many areas, such as evaluation processes.

The investigation was conducted in three stages. The first phase is the pre-trial control phase (pre-knowledge of children's renewable energy), where the dependent variable is measured, and questions were asked through individual interviews to children about what renewable

energy could be. The Fizi K. and Renewable Energy storybook was drawn by the researcher with big pictures, and the story was read by restating it in accordance with the level of the children. In the middle of the 2021–2022 fall semester, the story was read to children of 5- to 6-year-old group by the researcher in a 30-minute period to children. In the final stage, children were asked to draw examples on renewable energy again. The research design is shown in Figure 1.

Study Group

The study group consists of 40 children in the 5- to 6-year-old group, of which 20 comprises the study group and 20 comprises the control group, who are trained in Çanakkale Onsekiz Mart University children's House Kres and kindergarten. Experimental group children were selected by purposive sampling method. The experimental group used scientific stories about renewable energy sources for children. The research protocol has been approved by the Scientific Research Ethics Board of the Graduate Education Institute of the Rector of Çanakkale Onsekiz Mart University. The families of the children were informed about the study, and the children's participation permissions were obtained. During the entire research process, ethical considerations and guidelines regarding the privacy of individuals were taken into account.

Data Collection Tools

The Fizi K. and Renewable Energy storybook written by Blandine Pluchet and Virginie Rochetti (2014) was used as the data collection tool. The book is an elementary school story. For this reason, it was shortened by the researcher in accordance with the level of preschool children and their pictures were drawn in large format. Three experts, respectively, from children's literature, science education, and preschool education, were asked to evaluate the subject, content, and language of the *Fizi K. Renewable Energy* storybook. The story was read to 10 kindergarten children as a pre-treatment application. After reading the story, questions were asked to the children and the average score for understanding the story was found to be 8.75 (3-10) over the midpoint of 5.00. Therefore, the pre-treatment provides evidence to support the claim that the story is suitable for reading to preschool children.

Data Collection

The data are collected using two different tools before and after the experiment. The data collection approach is designed to provide children with a number of different opportunities to demonstrate what they know and what they can do. The first vehicle used is the interview questions. In the interview, the researcher had a face-to-face interview with the children for about 20 minutes to gain a general understanding of their knowledge of renewable energy. The development of interview questions is based on literature screening. All data collections were conducted by the same researcher during the event. The interviews were recorded to permission from preschool children's' families of the children. It was taken care to include details of actions that could help interpret children's reactions. As a second tool, children's drawings were used to express their ideas. In the second session with children, the story "Fizi K. and Renewable Energy" was read to children in an interactive way, along with the images generated by the researcher. The reason for choosing the story reading technique is that children tend to associate themselves with the heroes of the story by linking their experiences with the content of the book, and that encourages their interest in the subject. Before reading, during reading, and at the end of reading, the researcher can create an environment for discussions that help break unwanted behaviors and create new patterns of action.

During the pre-test and final test interview, the researcher asked the children to draw their thoughts on renewable energy sources. Some results were achieved by comparing the answers that children gave before and after the story reading event. The story to be used in the research began to be told to the children who would participate in the study: "In the infinite universe, a small blue planet among billions of stars continued to revolve around itself day and night. There was a country on this planet. In this country, there lived a curious girl named Fizi K, with a big, big black eyes, a big, triangular red glasses. Fizi K. heard that their country's energy sources are running out and that something has to be done about it and is on its way to a meeting at Belbasmukutar's house. What was said at the meeting had a huge impact on Fizi K. And she started researching things immediately to do something. And she decided to visit the great Professor first. That's where she would find answers to the questions she was looking for." In this way, the researcher tried to draw children's attention to the story because the researcher wanted to wake them up and make them express themselves more easily.

Validity and Reliability

Data diversification was made to ensure the internal validity of the research. In-depth information has been taken from the children in the experiment group and control group with the interview questions. In addition, children's drawings of renewable energy are used as data sources. Guba and Lincoln (1982) note that qualitative research should be plausibility rather than credibility (trustworthiness). There are many ways to increase credibility. These are long-term interactions (prolonged involvement), participant confirmation (member checking), and expert review (peer debriefing) (Holloway & Wheeler, 1996). Data collected from the same individual through multiple conversations will also be stronger in terms of reflecting the truth. For all these reasons, the spread of interaction between the researcher and the data source to a wide time, where possible, will increase the credibility of research data (Yıldırım & Şimşek, 2013). The analysis of the data collected in this study was carried out by the researcher and two experts. The external validity of the research was carried out by planning the research process in detail. All the stages of the research were presented in detail, and the workgroup was created by the maximum diversity sampling method.

Analysis of Data

After the interviews and pictures of the children were transcribed, the analysis of the answers to the interview questions by the researcher and two experts was done by the "content analysis" technique. The main purpose of the content analysis is to reach concepts and relationships that can explain the data collected (Yıldırım & Şimşek, 2013). For this purpose, the interview questions, the interview questions asked before and after the story reading, and the illustrations drawn were analyzed separately. As a result of the analysis of the data, each child's answers to the interview questions were identified and organized by identifying common code and themes. The frequency values of common themes are given.

Figure 1.
Research Design.

The Role of the Researcher

In line with the research, the researcher tried to bring out the characteristics of the current situation from a deep perspective in the process of collecting, analyzing, and reporting data. The researcher also did not express any ideas while asking questions to the children, but only provided a speaking environment that would enable the children to express their thoughts.

Research Ethics

In this study, data were collected with the permission of Çanakkale Onsekiz Mart University Ethics Committee. The first section of the semistructured interview form is the participant consent form section. Participants were included in the study on a volunteer basis.

Results

The findings of this research, which examines the impact of storytelling in teaching renewable energy sources to preschool children, will be in this section. At this stage of the research, analysis performed for research subpurposes is presented.

Findings on Children's Information on Renewable Energy Sources Prior to the Training Intervention

As a result of the interviews conducted before the children's educational intervention, the relationship themes and categories were created for each question examined.

The themes and categories based on the answers given by preschool children to the question "What is energy?" are included in Table 1.

As shown in Table 1, the answers given by children in the experiment group and control group are grouped into three themes: human source, extinctible energy source, and natural source. In the human origin theme, six children in the experiment group expressed energy as running. In the field of energy-depleted theme, four children described energy as machine operation and design, while three children described it as television operation. In the natural source energy theme, two children expressed that energy is a combination of hot and cold air. In the control group, eight children in the human-induced energy theme expressed energy as running, while five children expressed energy to be fast. Six children expressed energy in a depleted energy theme as charging the phone. One child expressed energy as the food production of plants. Table 2 includes themes and categories created for the answers given by the children who were asked the question "What is the energy?" In Table 2, the opinions of children in the experiment group and control group are grouped into three themes: human origin, exhaustible energy source, and natural source. In the human energy theme, six children in the experiment group expressed food as energy sources, while two children expressed energy as resting. In the theme of the energy-depleted theme, seven children stated that the energy source was electricity and two children stated that the energy source was internet. As a natural source of energy, one child expressed waterfalls and water flowing from the sea, while one child said sun as an energy source. In the control group, five children in the human-induced energy theme stated that running energy source too fast. Four children in the depleted energy theme indicated water supply as the source, and it is understood that two children are reporting opinions about their energy plants in the theme of exhaustible energy.

Table 1.
Before Reading the Story, Ask Children's "What is Energy?" Opinions on the Question

Theme	Category	*f*
Experiment group		
Human source	Running	6
Extinctible energy	Operation of machine	4
	Do design	4
	Working of TV	3
Natural source	Combination of hot and cold air	2
Control group		
Human source	Running	8
	Be fast	5
Extinctible energy	Charging the phone,	6
Natural source	Produce nutrient plans	1

Table 2.
The Views of Children on the Question "What is Energy?" Before the Story

Theme	Category	*f*
Experiment group		
Human source	Rest	6
	Eating	6
Extinctible energy	Electric	7
	Ethernet	2
Natural source	Water from waterfall or sea	1
	Sun	1
Control group		
Human source	Running too fast	5
	Do sport	4
	Rest	2
Sonic (one of character)	1	
Natural source	Water	4
Extinctible energy	Energy factories	2

Based on the children's answer to the question "What do you do when you run out of energy?" the theme, category, and frequencies are given in Table 3.

In Table 3, children's answers about what to do when Experimental and control groups have run out of energy and it is a theme originating from human characteristics. While seven children in the experimental group expressed their views as eating to provide energy again when their energy ran out, five children expressed their views on rest, four children on drinking water and four children on sleep. In order to restore energy in the control group, 6 children expressed their opinions according to the categories of drinking water, 5 children walking slowly, 3 children sleeping, and 2 children doing sports and watching television.

In Table 4, the children were asked the question, "If all energy runs out, how do you generate energy to operate the machines?". There are themes, categories, and frequencies for their answers to the question.

In Table 4, the opinions of children in the experiment group are collected under three themes: human origin, extinctible energy

Table 3.
Children's Opinions on the Question "What Do You Do When You Run Out of Energy?"

Theme	Category	*f*
Experiment group		
Human origin	Eating	7
	Rest	5
	Drinking water	4
Control group		
Human origin	Running slowly	5
	Sleeping	3
	Do sport	2
	Watching TV	2

Table 4.
Children's "How Do You Produce Energy Again When Your Energy Is Depleted?" Opinions on the Question

Theme	Category	*f*
Experiment group		
Supernatural power	With my own energy	5
Human origin	Calling a mechanic	3
Depleted energy	Using electricity	7
	Using a flashlight	1
	Setting up factory	1
	Using cables and ropes	1
Renewable energy	Solar power	1
	Energy generation from lightning	1
	Digging a hole and find water	1
	Storing electricity in the machine	1
Control group		
Depleted energy	If the energy runs out, it cannot be found again	6
	With flashlight	3
	With cable	3
	Light a candle	2
	Build a factory	1
	With fuse	1
Renewable energy	Solar power	1
	Water power	1

source, and renewable energy based on supernatural powers. In the control group, the views of children are grouped into two themes: energy depleted and renewable energy. In the experiment group, one child talked about the call for mechanics in the human-induced energy theme, while five children in the supernatural power theme stated that they would generate energy on their own. In the field of exhaustible energy, seven children talked about using electricity, using one child's flashlights, factory building, and cable and rope power. On the theme of renewable energy, a child's views were coded as solar energy, energy production from lightning, digging a hole and finding water (underground water resources) and storing electricity in a machine. In the control group, six children in the contact of exhaustible energy said that if their energy ran out, they would not be found again. Three children stated that they could produce energy with flashlights and cables. The two children said they would produce energy from candles. A child stated that energy can be produced from factories and electricity insurance. In the theme of the renewable energy source, one child said that energy could be generated through sun and water.

Findings of Kids' Drawings and Comments on Renewable Energy Prior to the Training Intervention

According to the findings in Table 5, which included some illustrations of the children in the control group before the training intervention (Table 5), the picture of boy CG3 is described as "I drew a

Table 5.
Images and Comments on the Renewable Energy Source Prior to the Learning Response of Children in the Control Group

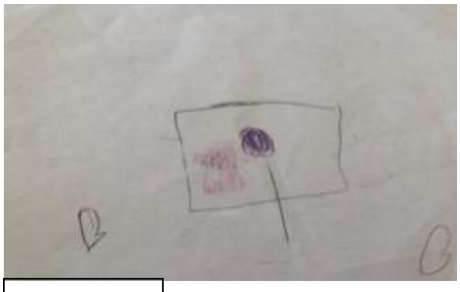
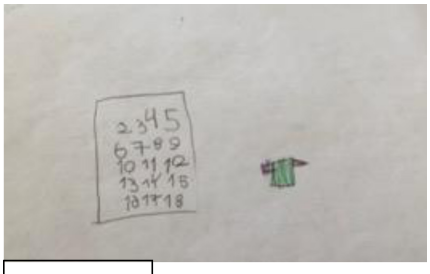
Children's Drawings	Children's Reviews	Children's Drawings	Children's Reviews
 CG3	"I drew balloons and frames."	CG8	"I drew a child running here. The running child gets energy from the sport."
 CG11	"The clothes are being renovated. It's being broken and rebuilt in the factory."	CG18	"Smiley face turns into a potato. The potato becomes French fries."
CG13	"I drew my father. Dad's home from work. He opened the closet. There was an old apple in it. Then suddenly it became a new apple."	CG2	"I drew a toy car, a magnet, a closet. The boy drinks milk, his energy grows. When you pull the handle of the machine, the magnet turns."

Table 6.
Images and Comments on the Renewable Energy Source Prior to the Learning Response of Children in the Experiment Group

Children's Drawings	Children's Reviews	Children's Drawings	Children's Reviews
EG9	"I drew balloons, clouds, sun. The child eats cake at the table and drinks juice and gets energy."	EG7	"The cold air, the hot air and the warm air form energy. Cold and hot air combine to create pleasure, generate energy."
EG10	"I drew my sister and me. We're eating plums from the tree in the garden. And I'm full of energy."	EG14	"I am converting papers. Old clothes can turn into new clothes. It will be renewed."
EG6	"I drew children, houses, balloons, houses, flowers, clouds, stones and balloons. When I play, I run out of energy. I go home and rest."	EG19	"I play ball by the sea. I eat apples when I'm tired. I get energy again, I play games."

balloon and a frame". CG8 said, "I drew a picture of a running boy". The running child gets energy from the sport." as in. In addition, the CG2-coded child said, "I drew children, toy cars, magnets, cabinets. The boy drinks milk, his energy grows. When you pull the handle of the machine, the magnet turns," as specified in the drawing.

In the findings of Table 6, which included some illustrations prior to the teaching intervention of the children in the experiment group (Table 6), the child with code EG9 said, "I drew balloons, clouds, sun. The child eats cake at the table and drinks juice and gets energy." As he explained it, the EG7-coded child drew the drawing that depicted "the cold air, the hot air and the warm air form energy. Cold and hot air combine to generate energy.". Also, the EG6-coded child said as depicted by his drawing, "I drew children, houses, balloons, houses, flowers, clouds, stones and balloons. When I play, I run out of energy. I go home and rest."

Findings on the Drawings and Comments of Children of Renewable Energy After the Training Intervention

When looking at Table 7 of some drawings and narratives (Table 7) of the children in the control group, the child with the code CG8 said, "I drew myself, the sun, my house and a flower. I'm playing a game. I'm not running out of energy," the child with the code CG10 said, "The old T-shirt is being refreshed on the machine." It is a figure. The child with the code CG2 said, "I drew the world. The children are getting energy from the red cabinet." He said, "He told me about the picture he drew."

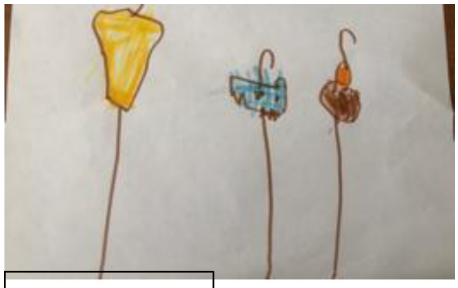
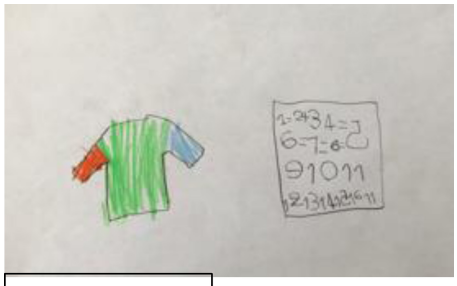
Table 8 contains some drawings of the children in the experimental group after the educational intervention. All the machines in the house are given panels that collect solar energy on the roof. And the wind goes through the pipe and into energy." EG15-coded child explains, "When emergency lights come on from the wind trio control center, energy is sent to all living people. Solar panels also store energy." In addition, the EG3-coded child said, "the wind bleachers turn the wind into energy. The rays from the sun are stored in the electrical panels. Lots of flowers and butterflies live happily in nature. The environment is not polluted at all."

Discussion

In this study, children were found to have no knowledge of renewable energy sources in general, except for a few children before the training intervention. It is also remarkable that they do not express the correct prerequisite information about the concept of edible energy. The positive developments following the practice support the idea that the use of the story in scientific concept teaching plays an important role in helping children create new concepts, correct concept misconceptions, participate in the learning process, as well as developing observational skills, being more environmentally sensitive, and increasing problem solving skills (Greenfield et al., 2009; Oğuz, 2007; Şimşek & Çınar, 2008).

Before the teaching event based on the narrative concept, children have insufficient knowledge of the concept of renewable energy, but

Table 7.
Pictures and Comments on the Renewable Energy Source After a Learning Response of Children in the Control Group

Children's Drawings	Children's Reviews	Children's Drawings	Children's Reviews
 CG16	"I drew shirts and two hats. They were renewed."	CG8	"I drew myself, the sun, my house and a flower for my teacher. I'm playing a game. I'm not running out of energy."
 CG10	"The old T-shirt and paper are being replaced on machines."	CG8	"I drew the breakfast table. I drink milk for energy. And I'm eating carrots, olives."
CG2	"I drew the world. The children are getting energy from the red cabinet."	CG20	"I drew children running home from school. They have a lot of energy."

children in the study group where the story reading activity took place have shown positive improvement. After the training intervention, it was revealed that they created the correct definitions when defining what renewable energy is. It also shows a variety of examples of what renewable energy sources are. It is thought that the natural sciences will live through the configurator approach that is the foundation of the preschool education program integrated with stories, making teaching effective, fun, and permanent with learning experiences. Compared to the previous and subsequent conversations of children before and after the training intervention, there are significant differences. During the reading of the story, it was observed that the children listened to the story with interest and were willing to answer the questions asked. In addition, it has been understood that children have a facilitating effect on the learning of the concept of renewable energy. At the same time, the fact that children identify renewable energy with their own sentences other than the sentences reading from the book is proof that high-level cognitive skills have been achieved in learning. In this respect, it allows students to increase their internal interactions and make them responsible for their own learning (Demircioğlu et al., 2006). Nature sciences are a rich and important area of interest for children because of their internal curiosity because it is concluded that small children have the ability to learn about these issues through deep observation skills in their daily lives. In this respect, stories make it easier for children to remember (Demircioğlu, et al., 2017).

According to the data obtained from the research, it has been understood that teaching scientific concepts by narrating will enable the child to develop a positive attitude towards science. In this study, it is seen that it can be effective in understanding the concept of renewable energy. The data obtained from the study support the notion that the well-structured concept teaching in similar studies has a positive impact on the skills of cognitive development and acquiring science concepts (Akman, et al., 2003; Ayvaci, 2010; Brenneman & Louro, 2008; Kallery et al., 2009; Sahin, 2006; Tsai & Liang, 2009; Urbančič & Glažar, 2012). Similarly, the stories used in teaching can encourage the interest in reading about science, which suggests that it encourages positive attitudes toward science (Broemmel & Rearden, 2006; Mantzicopoulos & Patrick, 2011; Stinner, 1995). In addition, the fact that children talk about the impact of renewable energy on protecting the environment in their answers after the educational intervention shows that they are aware of renewable energy sources and are sensitive about the correct and effective use of energy. This result coincides with the study of Yenice and Tunç (2018). In this context, it has been found that the use of stories in teaching the concept of renewable energy from scientific concepts is an effective way to use them in the preschool period and contributes to the development of higher level cognitive skills for children. In all these ways, it is important to take advantage of the opportunities that children's natural curiosity and unlimited imaginations create during

Table 8.
Pictures and Comments on the Renewable Energy Source of Children in the Experiment Group After the Training Intervention

Children's Drawings	Children's Reviews	Children's Drawings	Children's Reviews
EG8	"A flash of lightning from clouds creates an energy. All the machines in the house are given panels that collect solar energy on the roof. And the wind goes through the pipe and into energy."	EG1	"The waste food is burned in a cup of pears, apples, grapes, berries. The gas that comes out when it burns is stored by a pipe. Then the gas goes into the furnace with a pipe. People are cooking there in the pot."
EG15	"When emergency lights come on from the wind trio control center, energy is sent to all living people. Solar panels also store energy."	EG5	"Hot water underground goes from the electric transformer to the pipes to the stove, so it heats the library."
EG3	"The wind bleachers turn the wind into energy. The rays from the sun are stored in the electrical panels. Lots of flowers and butterflies live happily in nature. The environment is not polluted at all".	EG2	"The child cooks with rays from the sun in a pan made of bright metal."

the preschool period, a magical period in learning scientific concepts and creating positive attitude.

Some of the recommendations made in line with the results obtained in the research are given.

- This research is based on the concept of renewable energy sources, and research can be on different scientific concepts.
- In-service training courses can be given to teachers so that they can use stories effectively in the teaching of scientific concepts in the preschool period.
- More effective permanent learning can be achieved by using stories together with other learning techniques in teaching scientific concepts.

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Informed Consent: Written informed consent was obtained from the children's family who participated in this study.

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