ENVIRONMENTAL EDUCATION TECHNOLOGIES

TECNOLOGÍAS DE EDUCACIÓN AMBIENTAL

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Abstract

The acceleration of scientific and technological progress has influenced the change of the environment and actualized the need for the development of environmental education. The most important direction of modern educational institutions is the formation of new environmental thinking of the younger generation and changing consumer attitudes to the environment. The article reveals the experience of introducing educational technologies into the process of environmental education. Environmental education is a field of pedagogy that involves the formation of a humane attitude to nature, the formation of a system of environmental knowledge

and ideas, as well as direct participation in all possible activities for the care of plants, animals and nature protection.

Keywords: environmental education technologies, environmental awareness, environmental thinking, gaming technologies

Resumen

La aceleración del progreso científico y tecnológico ha influido en el cambio del medio ambiente y ha actualizado la necesidad del desarrollo de la educación ambiental. La dirección más importante de las instituciones educativas modernas es la formación de un nuevo pensamiento ambiental de la generación más joven y las actitudes cambiantes de los consumidores hacia el medio ambiente. El artículo revela la experiencia de introducir tecnologías educativas en el proceso de educación ambiental. La educación ambiental es un campo de la pedagogía que involucra la formación de una actitud humana hacia la naturaleza, la formación de un sistema de conocimientos e ideas ambientales, así como la participación directa en todas las actividades posibles para el cuidado de las plantas, los animales y la protección de la naturaleza.

Palabras clave: tecnologías de educación ambiental, conciencia ambiental, pensamiento ambiental, tecnologías de juego

1. Introducción

The acceleration of scientific and technological progress has influenced the change of the environment, so there is a need for the development of environmental education (Andrienko, 2019a). The most important direction of modern educational institutions is the formation of new environmental thinking of the younger generation and changes in consumer attitudes to the environment to minimize environmental problems (Andrienko, 2019b). Changes in the requirements for the formation of environmental thinking are justified by the contradictions between society and nature (Kobernyk et al., 2018), so there is a need to find new ways to form the environmental culture of students in preschool educational institutions (Aleksieienko-Lemovska, 2019). Environmental culture is formed at

different educational levels. Its basic foundations are formed in pre-school educational institutions (Andriushchenko, 2018). Various technologies of environmental education are used for this purpose (Grigoriev et al., 2019). The main directions of environmental education are:

- Basic ecological knowledge about the nature of the native land (Halatsyn, Feshchuk, 2019);
- Initial knowledge and practical skills in the field of environmental management (Gladkov et al., 2019);
- Nature protection (getting primary ideas about a person as a living organism, about human ecology (Klinkov, 2018).
- The creative and spiritual and moral potential of each child in the process of interaction with nature (Bakharev, 2019).

Play activities play an important role in the process of children's knowledge of the world around them, so game-based educational technologies are used in environmental education (Kotlyar, 2008). Educational technology is a system of gradually implemented actions of the teacher and students, characterized by the controllability of results. Technologies allow intensifying the activity of pupils (Donetskova, 2019). Let them:

- Actively develop new skills;
- Develop independence, moral, aesthetic, and worldview attitudes;
- Create a sense of collectivism;
- Adapt to the environment;
- Exercise self-regulation.

Role-playing allows you to create a creative laboratory of self-education, in which children model their behavior, build relationships (Linkov, Klinkov, 2018). In this article, we describe the experience of implementing educational technologies to form motives and practical skills of environmentally appropriate activities for children to demonstrate independence, initiative, and cooperation (Cirdan, 2019). Various types of games are implemented in the course of environmental education:

- Environmental interactive games;
- Role-play;
- Didactic game (Chertovskikh, 2019);

- Imitation game;
- Competitive games;
- Games-travel;
- Interactive game.

In the process of environmental education of children, case technologies are used that allow us to analyze situations and specific cases. Contribute to the development of the ability to analyze various problems and find the right solution. Develops communication capabilities in the joint activities of children and their parents (Filchenkova, 2019). Planning is a feature of any technology. Each environmental event has its date and time. The technology also implies a detailed description of the teacher's activities in organizing events. The overall focus of many interrelated and detailed planned activities for the entire year of study is to:

- Orientation to the wide use of the immediate natural environment of preschoolers, developing ecological environment;
- Organization of various activities of children in the living corner (educational-organization of observations of plants and animals, practical-development and maintenance of conditions for living creatures, environmental-feeding of birds);
- Use of children's educational literature;
- Organization of joint activities of children and adults (educators, parents);
- Familiarizing children of all age groups with natural phenomena;
- Regulating the inclusion of game activities and game training situations in the system of environmental and pedagogical activities in all groups.
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Game technologies in environmental education are aimed at the formation of independence (Oros, 2018), initiative, a cooperation of children to achieve common results and develop knowledge about the world and its relationship with humans.

2. Material and Methods

The research methods used were: a survey of children, their parents and caregivers, individual conversations with children and parents. The sample of respondents consisted of more than 300 participants in educational

relations, including teachers, preschoolers and their parents. The Green world festival was held among children and their parents, which included several games on environmental themes and an environmental concert. The environmental concert was attended by children of older age groups. A total of 15 children's groups took part in the Festival. The article presents the components of the content of environmental education in a pre-school educational institution. Table 1 shows its characteristics.

Table 1. Characterization of the components of environmental education

No.	Component	Characteristic
1	Active	It manifests itself in the readiness of the preschooler for a variety of creative activities in the process of environmental games, mastering the skills and respect for nature
2	Cognitive	It reflects the formation of the child's knowledge about natural phenomena, the role of man in nature, about the relationship between nature and man, mastery of the rules of responsible behavior in relation to the environment
3	Valuable	The formation of value orientations and the child's perception of himself as part of nature

Comparing the results of the study shows a picture of children's achievements – the development of ideas about nature, environmentally appropriate behavior in a living corner, proper interaction with plants and animals.

3. Results

The formation of modern environmental education is carried out in the interests of sustainable development of society and nature. The use of modern educational technologies in environmental education is conditioned by the need to achieve guaranteed results. The formation of environmental awareness and environmental culture of children is the basis for the development of environmental competence, which is studied

today at the conceptual level and is effectively implemented in environmental education programs at all levels of training, including preschool. This is reflected in their works by Yu. Nikitin, A.V. Asmolov, A. N. Zakhlebny, E. N. Dzyatkovskaya (Sakhlebny, et al., 2007) and others. As shown many works by authors (V. G. Maralov, V. A. Sitarov, I. I. Chesnokova, V. A. Yasvin), preschool age is the most favorable period for the formation of environmental consciousness and thinking.

Game technologies in environmental education are a group of methods and techniques for organizing the educational process in a game form, which stimulates the cognitive activity of children, motivates them to independently search for answers to questions. Environmental consciousness is an understanding of the inextricable link between man and nature, based on the well-being of the social integrity and comparative immutability of the natural environment and uses this understanding in practice (Moskvina et al., 2019). S. N. Revin said that the integrity and value of the natural world as the common home of all living beings becomes the leading idea of environmental education (Pliushch, 2018). Environmental education is understood as a direction of pedagogy that involves the formation of a humane attitude to nature (Prokhorova, Semchenko, 2018), the formation of a system of environmental knowledge and ideas, as well as direct participation in feasible activities for the care of plants, animals and nature protection (Pichugina, Pichugina, 2019). Environmental education of preschool children includes:

- Fostering a humane attitude to nature (Pisarenko, 2019);
- Formation of a system of environmental knowledge and representations (Petrichev et al., 2018);
- Development of aesthetic feelings (the ability to see the beauty of nature and the desire to preserve it) (Pisarenko, 2019).
- Participation of preschool children in feasible activities for the care of plants and animals, protection and protection of nature (Raven, 2017).

Game technologies in environmental education of children play a significant role, which is manifested in:

- Formation of their ecological consciousness (Tsarapkina et al., 2019a);
- Activity cooperation in cooperation (Tretyakov, 2019);

- Unity of development of each pupil in the group (Tsarapkina et al., 2019b);
- Interactive communication (Tolkanuk, 2019);
- Success stories (Vaganova et al., 2019b)

Children's play activities and their importance in environmental education are evaluated by modern research scientists at a high level (Vaganova et al., 2019c). The wide implementation of game technologies and specially designed game training situations creates a positive emotional background for children and provides the necessary level of environmental knowledge development, development of a correct attitude to nature (Osadchenko, 2019). An important role in environmental education is played by goodwill, emotionality, and a personality-oriented way of interaction between adults and children (Vaskovskaya, 2018).

The result of the implementation of educational technologies in environmental education should be the formation of a new environmental culture, increasing the environmental education of children. The implementation of environmental education technologies is carried out in specially formed conditions. Environmental education of children is accompanied by role-playing environmental games, reading fiction about nature, writing environmental fairy tales. We have created an ecological and developmental environment that includes:

- Greenhouse;
- Vegetable garden on the site of an educational institution;
- Kitchen garden on the window;
- Visual and demonstration materials for children and parents (Vaganova et al., 2019a).

In the educational process, research is carried out:

- About a person;
- About natural materials (sand, clay, wood and others) (Vaganova et al., 2019c);
- About natural phenomena (thunderstorms, wind, snowfall, sun, and others);
- About the world of plants (about growing seeds, bulbs of different plants).

In ecological education are involved in a game-puzzles, games study.

Familiarity with the life and work of people in nature is carried out through the game "I am the sun; I am the rain and the wind". Such games arouse interest in nature and develop a value attitude to it. Children analyze letters of complaint from residents of a living corner, forest, garden. They discuss these problems and decide how to help the animal and plant world. The game "Young ecologists" is aimed at introducing children to the human influence on environmental change. Children develop the ability to see, feel, discuss natural phenomena, and ask questions. This way the child gets the opportunity to communicate and interact with the surrounding world in a meaningful way. The game "Gardener" allows children to observe plants, develop hard work. Children take care of indoor plants, learn about the need for timely watering, learn to distinguish plants that grow on the territory of our country and plants that can only be found outside of it, learn about the difference in caring for such plants. In the process of implementing game technologies, children's activities are full of physical, intellectual and aesthetic efforts that are aimed at obtaining a useful result. In the process of activity, children begin to realize the dependence of the life and condition of plants and animals on human labor.

Case technologies are used in the joint activities of children and their parents. For this purpose, various illustrations are used: "does a child behave Correctly in nature?". Children develop communication skills by communicating with their parents and realize that there can be many correct answers. Discussion technologies are used in the process of discussing the questions "what is good and what is bad", "Why in autumn the leaves of trees change color and fall off", "Why some plants have small seeds, and others have large ones". Electronic technologies are widely spread in the pre-school education system, so they are used in the classroom:

- Sound materials where the voices of birds, animal sounds, forest noise, surf, rain, wind are recorded;
- Multimedia presentations designed for each individual topic.

Through multimedia presentations, children get acquainted with nature, the animal world and the natural phenomena of other countries.

Children participate in the environmental theater, where they perform theatrical productions together with their parents, compose poems and ditties on the theme of "protecting the environment", promoting environmental protection. As part of the implementation of environmental education technologies, various themed games were held for children throughout the year. In autumn, children participated in a themed game "Harvest". In winter, the pupils together with their parents made bird feeders and kept calendars for growing onions on the windowsill. In the spring, children took part in the game "Clean city". In the summer, children draw posters calling to protect the forest from fires, and together with their teachers participate in the breakdown of flower beds and vegetable gardens.

The Green world festival was held among children and their parents, which included several games and an environmental concert, which was attended by pupils of two groups of older children. The goal of the game "food Chain" is to consolidate the skills of pupils to build the simplest food chains of animals in nature. The game used a set of cards with drawings of animals, as well as a multimedia presentation, on the slides of which the correct answers are located. As soon as the children make up the food chain, the teacher shows the correct answer and the children analyze the correctness of the completed task. 4-6 children took part in one subgroup. The game "Lesnik" was attended by children in subgroups of 4 people. The goal of the game was to consolidate knowledge about human behavior in the forest.

The cards show drawings of forest objects (butterflies, an anthill, flowers, berries, mushrooms – edible and inedible, a bird's nest, a birdhouse, a fire). In the subgroup, each of the children in turn becomes a "Forester" and pulls out one of the proposed cards. Its task is to tell about this forest object and behavior near it. The game "Guess the name" consists in the fact that the teacher shows the children one of the items in the basket (these are fruits and vegetables). Then he asks the children to find the same fruit or vegetable in their basket and remember its name.

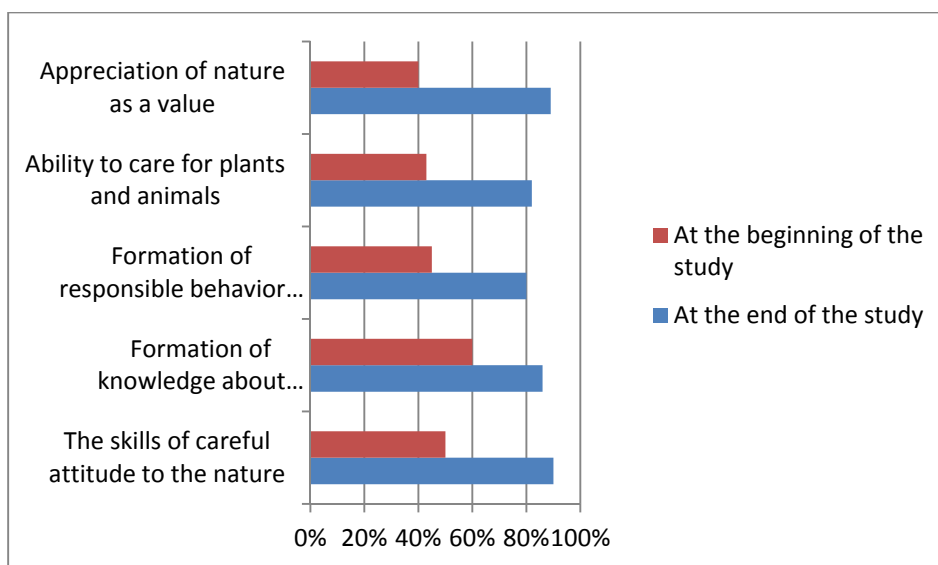The results of using technologies for the environmental education of preschool children are shown in figure 1.

Figure. 1. Developing environmental attitudes and skills among pre-school children

4. Discussion

At the beginning of the study, the formation of the value component was formed in 40% of children. The knowledge of the majority of kindergarten students reflected the material significance of nature and the need to protect it, they justified it from a utilitarian and practical position, the position of the benefits that it brings to people. The lack of sensory and emotional perception of nature leads to the formation of a user's attitude to nature. Thanks to the environmental games, we were able not only to form the necessary knowledge about nature, but also to value orientations. The cognitive component reflects the formation of knowledge of the rules of human behavior in society and nature. Game technologies allow the child to gradually master the system of behavioral environmental rules: do not pollute the environment, do not make noise in the forest, and so on.

The formation of the activity component shows that children have an environmentally–oriented activity. They take an active part in the work of caring for plants and animals in a corner of nature, show diligence and independence.

Environmental games activate the educational process, promote the development of mindfulness, observation, memory, and thinking.

The content of children's environmental education includes several main areas of child development: physical, social and personal, cognitive, aesthetic, and ensures the involvement of children in independent knowledge of nature.

The results of the study revealed the positive impact of educational technologies on the formation of environmental consciousness and the environmental culture of students. During the game, children learn facts that help form a system of ideas about nature and the need to protect it. Limitations

The results of the presented experiment are limited to a sample of study participants, encompassing students of only university. The study within the limited sample of students does not allow to cover the entire focus group of young people. For further more reliable collection of statistical data, it is necessary to implement a comparative analysis of a more reliable sample.

5. Conclusions

The results of the research allow us to form an idea of the current state of environmental education, its meaningful implementation in pre-school educational organizations. The research allowed us to form an idea about the possibilities of educational technologies in the education of ecological consciousness and culture in children. Thanks to environmental education technologies, preschool children show a great interest in the world around them. Pupils show a pronounced independent interest in objects and phenomena of nature, strive to study them. In the course of games, preschoolers learn to establish relationships that exist in nature, Refine and generalize previously obtained knowledge, and expand their horizons.

Implementation of educational technologies in environmental education contributes to the qualitative formation of environmental culture of students of an educational institution.

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Conflict of interests

The authors declare the absence of obvious and potential conflicts of interest related to the publication of this article.

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