The Use of Information and Communication Technologies in the Environmental Education of Primary Schoolchildren

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Abstract. The article deals with the actual problem of environmental education and upbringing of children of primary school age. The results of a study conducted with the aim of studying the influence of information and communication technologies on the effective assimilation of knowledge about the world around by younger students, the education of respect for nature are presented. In the course of the pedagogical experiment, the hypothesis was tested that the use of various elements of information and communication technologies in the lessons of knowledge of the surrounding world will contribute to a better assimilation of natural history knowledge, skills and abilities and the formation of qualities of respect for nature in younger students. The results of testing conducted in the experimental and control groups at the ascertaining stage showed: there are certain gaps in the natural history knowledge of students; the degree of their interest in the subject "World around" is not high enough. The results of the questioning of teachers showed that information and communication technologies are rarely used at the lessons of knowledge of the surrounding world in the third grade.

1 Introduction

The problem of knowledge of the surrounding world in elementary school arises in connection with the issues of environmental education and education of the younger generation. Mankind has come close to realizing the importance of a reasonable attitude to the environment, which has become a moral principle of behavior [1]. Of course, the level of human living conditions is increasing due to scientific and technological progress. However, along with the growing human intervention in the environment, changes are taking place, leading to catastrophic consequences of an ecological and biological nature. These changes are in most cases irreversible. In this regard, the issues of environmental education and upbringing of the younger generation in the modern technological world are burning, exciting the consciousness of society, and it is impossible to overestimate them. A reverent attitude to nature and its protection is becoming a priority problem of education. Undoubtedly, the future of our planet depends on the environmental literacy of children [2].

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Pedagogical theory and school practice received a social order of great economic and social importance - to educate the younger generation, able to carefully and responsibly treat the environment, protect and renew natural resources.

At the training stage of the study in the experimental class, a system of elements of information and communication technologies (video materials, thematic videos, an interactive whiteboard and presentations in the form of slides, etc.) was introduced in the process of implementing a specially designed training cycle.

A comparative analysis of the results of the control stage confirmed the effectiveness of ICT - the level of assimilation of natural history knowledge in the experimental group became higher; the answers of the children showed that the lessons of knowledge of the world are a priority for a large number of students; children believe that information and communication technologies in the lessons of knowledge of the surrounding world bring significant benefits.

2 Research Methodology

It is important that already from childhood a person develops the habit of considering each aspect of his behavior from the position of ecological balance. In this regard, there is a need to introduce elements of ecology into educational programs already from elementary school, and even from preschool age. This condition is insufficient, but necessary for ecological culture to become part of the general culture of society. Only a serious inclusion of the sphere of school education in the process of ecologization of public consciousness can give tangible changes in this process [2].

Primary knowledge about nature, the skills of a reasonable attitude to the world around us, the skills of protecting all living and non-living things are actively formed in children in elementary school. Successful implementation of ecological education of children of primary school age is possible due to some ecological features of children: emotional responsiveness, a tendency to imitate, susceptibility to the influence of the educator, curiosity [5]. On the basis of these qualities, in the future, an awareness of the value of nature for human life, the diversity of connections in the system “man - natural environment” will be formed; education of a moral attitude to objects and objects of nature; the desire to make a personal contribution to the benefit of nature. It is in elementary school that the formation of scientific knowledge about the environment, the formation of the emotional and moral attitude of the child to nature, the practical skills of children regarding the environment and their own health are formed [1]. At the initial stage of education, the following indicators of the formation of the ecological culture of the child are determined:

- the implementation of norms and rules of behavior in the world around as an independent motivation of the child;
- control by the child of his actions and their correlation with the situation of the environment and possible consequences for objects and objects of the surrounding world;
- the need to protect and care for certain animals and plants;
- the ability to independently choose the object of their environmental activities;
- the presence of altruistic character traits: kindness, responsiveness, caring, ability to empathize, attentive attitude to people, living and inanimate nature, readiness to help those in need [1].

Thus, the elementary school teacher is faced with many tasks of educating and teaching an emerging and developing personality. The increase in the mental load of students due to the increase in the amount of information and the need to solve a number of important educational tasks poses the problem of finding adequate methods and techniques for teaching and education for the teacher. How to activate the cognitive interest in the

environmental education of junior schoolchildren? - This problem is relevant in the framework of our study [3].

In the modern education system, there is an intensive saturation with many new methods of working with students. In the process of education, there is a constant search for effective technologies that contribute to the development of students' creative abilities, the formation of self-education and self-development skills.

At present, the goals, objectives and content of education are influenced by technological culture, which has become an integral part of the general culture of the individual. All this was reflected in the development of methods, techniques and technologies of training and education. Among the variety of different technologies used by the teacher in the educational process, information and communication technologies (ICT) are highlighted. Reasonable use of information and communication technologies helps to increase the cognitive interest of schoolchildren - students activate mental activity, broaden their horizons, deepen knowledge in the area under study, develop speech and thinking [3; 4].

The article presents the results of a study conducted with the aim of studying the influence of information and communication technologies on the effective assimilation of knowledge about the world around younger students, the education of respect for nature. In our opinion, the use of various elements of information and communication technologies in the lessons of knowledge of the surrounding world will contribute to a better assimilation of natural history knowledge, skills and abilities and the formation of qualities of respect for nature in younger students. The verification of this hypothesis was carried out using such empirical methods as: pedagogical experiment, observation, questioning, testing.

The study was conducted on the basis of middle School of General education number 3 at village Achkhoy-Martan with 3rd grade students.

3 Results and Discussions

For the period of the experimental work on the program of the academic discipline "The World Around", the topics "Variety of the animal world" and "Variety of the plant world" were held [4].

Experimental work was carried out in the logic of the classical psychological and pedagogical experiment. The objective of the ascertaining section in the experiment was to determine the level of formation of knowledge about the environment among elementary school students, the degree of their interest in this subject and to establish the nature of the relationship of younger students to nature. The results obtained were planned to be used to organize and conduct work in order to improve the quality of the educational process in the lessons of natural history and stimulate children's interest in the subject and in the world around them in general through a combination of various information and communication technologies. As part of the diagnostic activities, a survey was conducted of a teacher teaching the discipline "The World Around". The questions of the questionnaire were aimed at obtaining information about what pedagogical technologies are used in the lessons "The world around us", how often certain elements of them are used in teaching topics of knowledge of the world around us, and also what learning technologies children worked with most often.

The results of the survey showed that in the lessons of knowledge of the surrounding world in the third grade, the teacher most often uses game technology and student-centered technology. Information and communication technologies are used less often. This fact is explained by the insufficient level of ICT proficiency among teachers of the third grades (those selected as a sample of our study), as well as the lack of opportunity to study in a computer class.

The results of testing on the topic "Diversity of the plant world", conducted in two third classes (one of them is defined as an experimental group (EG), and the other is selected for comparative analysis and is a control group (CG)), showed that there are certain gaps in the natural history knowledge of students in the field of flora [5].

The analysis of the obtained results showed that the material covered was not learned well enough - 15% of the students in the experimental group and 10% of the students in the control group showed a low level of natural history knowledge - students do not have knowledge of the plant world as part of the educational material on the topics studied. 25% of the surveyed children from the EG and 35% from the CG showed an average level - at this level, insufficient assimilation of the material is found, the natural history outlook of students is limited to knowledge of the main groups of plants and their ability to grow.

Thus, it was found that there is no significant difference in the level of training on the topic "Variety of plants" among students in the experimental and control groups. In general, almost half of the subjects from both groups have an average and low level of knowledge on the topic "Diversity of the plant world" at the ascertaining stage.

In the study, we used another questionnaire, the purpose of which is to determine the interest of students in the subject under consideration [6]. Children are invited to evaluate the lessons of the World around and think about the benefits derived from the content of the subject.

The first question is "What is your favorite lesson?" - we found out that only 10 students are interested in the topics of the lessons of knowledge of the surrounding world, and most of the children in the class do not consider these lessons to be among their favorite ones [7]. This result coincides with the level of the rating of fine arts lessons.

"Do you like the lessons "The World Around You?" - was the second question that was asked by the students. We found that half of the students in the class like this subject, and the other half do not like it very much. Four students answered that they did not like this subject at all.

The third question - What tasks do you like more in the lessons "World around"? - was associated with the choice of tasks by children that they would like to receive and perform in the lesson. It turned out that games were the preferred tasks for students.

The fourth question - What, in your opinion, is the use of the fact that the lesson uses different types of tasks - games, presentation tasks, excursions, etc.? - was offered to students to explore their opinions about the various technologies used in the classroom, and their elements - the children were asked what benefits, in their opinion, each of these technologies brings [8]. On this issue, opinions in the class were divided: 11 people said that these technologies were of great benefit, 10 people said that these technologies did not bring much benefit.

The study showed that students prefer lessons in which they can show various types of activity - mental, physical, emotional. Children show a positive attitude towards the use of such elements of new technologies as presentations in the lessons. However, this method was rarely used in the classroom [9]. Based on the students' answers, we found that the lessons of learning about the world around us were not chosen as favorites by the majority of students in the class. Information was also received that the methods of information and communication technologies are practically not used in the lessons of knowledge of the surrounding world. It turned out that the majority of students consider it necessary to use the methods of information and communication technologies in the lessons "The world around us". Their use, according to the children, will diversify the learning process and will be useful for mastering the subject.

To solve the problem of determining the impact of ICT on the effective assimilation of knowledge about the world around us and the activity of students at the learning stage of the study, a system of elements of information and communication technologies was

introduced in the experimental class. The developed cycle of classes with the use of video materials, various thematic videos, an interactive whiteboard and slide presentations, in our opinion, will stimulate the activity and interest of children and help them develop a caring attitude towards the world around them [10].

In the course of classes in the experimental group, it was found that working with ICT elements enlivened students, led to greater activity of children in the classroom, which was observed by their answers in class, homework and questions asked. The children also found additional information, shared what they heard from adults or saw on television on this topic. Students not only learned the material better, but also showed their interest in the world around them, their concern about the environmental problems of our time and their readiness to make a feasible contribution to their solution.

During the entire learning phase of the experiment, students were asked at the end of each lesson to evaluate the technology used in the lesson in the following way: “I liked the lesson” (children emphasize their interest in the process; they say that they liked the forms used in the lesson and the methods of working with them; the lesson gave students good knowledge, skills and abilities that they use in interaction with the environment); “I don’t have any special impressions from our lesson” (students were not sufficiently captured by the work process, they were not carried away by the topic, they were not interested in either the information or the methods and techniques used in the lesson); “I didn’t like the lesson” (students do not work during the lesson, they do not show interest in the issues discussed, the lesson, in their opinion, did not give them any new and useful information).

At the control stage of the experiment, the tasks were set to check the quality of the system of thematic classes developed and tested by us, in which the methods of information and communication technologies were specially introduced by testing in the section “Diversity of the animal world”, in both groups.

The analysis of the obtained results showed that the knowledge gained in the course of thematic classes using elements of new technologies was assimilated quite well - in the experimental class, a high level of natural history knowledge was established by 70% of students; 28% of the entire experimental sample have an average level; and only 2% showed a low level of mastery of the material (at the ascertaining stage - 60% - 30% - 10%, respectively). In the control class, we did not find significant changes in the level of natural history knowledge - 60% of students showed a high level of knowledge (it was 55%), 30% of students showed an average level of knowledge (at the ascertaining stage it was 35%), and the same number of students showed a low level - 10 %.

To determine the interest in the subject of cognition of the world around us at the end of the control study, we conducted a survey “Students’ interest in academic subjects” with students in the experimental class [11]. Comparing the results obtained with the results of the ascertaining stage of the study, we found: on the question “Which lesson is your favorite?” most of the experimental class chose the lessons “World around” among their favorite lessons - 18 students marked them as their favorite; at the control stage of the study, the rating of the lessons of knowledge of the surrounding world was equal to the level of physical education lessons, which were preferred by almost all children at the first stage.

“Do you like the lessons “The World Around You?” - to this direct question, the majority of students answered that they love (at the first stage, half of the class answered this way). A minority answered that they did not really like these lessons, and two students did not change their initial opinion, emphasizing that they did not like “The World Around”.

On the third question, related to the choice by students of the type of tasks in the lessons, the children practically did not change their minds - preference was given to game tasks and presentations. It should be emphasized that the level of choice of presentations

was equal to the level of choice of game tasks (at the ascertaining stage, presentations lost quite a lot to game tasks).

The fourth question - What, in your opinion, is the use of the fact that the lesson uses different types of tasks - games, presentation tasks, excursions, etc.? - allowed to find out the opinion of students about how useful certain types of tasks used in the lessons are. In the experimental class, the opinion on this issue has improved - 4 people emphasize that the various technologies used in the lessons are of great benefit; 16 students believe that they are of great benefit; 5 children answered that the benefit is not very great, and 5 students answered that there is no benefit.

4 Conclusions

The results of the study allow us to draw the following conclusions: the use of information and communication technologies makes it possible to better assimilate knowledge in the lessons of knowledge of the surrounding world. The students gave feedback that they like classes that contain elements of activity of a different nature - mental, physical, emotional activity; they gave a positive assessment of information and communication technologies in the classroom; the answers of the children showed that the lessons of knowledge of the world are a priority for a large number of students; children believe that information and communication technologies in the lessons of knowledge of the surrounding world bring significant benefits.

Knowledge about the world around us and the growing interest in the topics of nature lessons stimulate schoolchildren to discuss topical environmental problems and develop environmental projects. Children began to collect video materials, presentations, which demonstrate the situations of the relationship between man and nature - positive and negative experiences. In almost every lesson, theoretical material was connected with practical. The children talked about their observations of the nature around them - flora and fauna. The most significant moment is the relationship between environmental education and environmental education. During the conversation with the students and during the feedback on the lesson or a separate topic, the students expressed their opinion on the problems of human relations with nature, put forward ideas for activities to improve the lives of animals and plants and their personal contribution to these activities.

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