

USE OF MODERN INFORMATION TECHNOLOGIES IN SCIENCE LESSONS IN GRADES 3 - 4

Nurumbekova Yorqinoy

Gulistan State Pedagogical Institute
Professor, Faculty of Pedagogy.

Rustamova Nilufar

Theory and Methodology of Education and Training (Primary Education)
2nd Year Master's Student.

<https://doi.org/10.5281/zenodo.19381961>

Abstract. *This article provides a detailed analysis of the methods and stages of application of modern information technologies in natural science lessons for grades 3-4. The results of the experimental work conducted during the scientific work and recommendations are given. This information can be used as necessary information by primary school teachers and researchers.*

Keywords: *nature, primary school, education, upbringing, ecology, methodology, technology, student, information technology, independent learning.*

The modern educational process is closely related to innovative technologies, and the development of information and communication technologies has a significant impact on teaching methods. In particular, the use of information technologies in natural science lessons in primary education plays an important role in increasing students' interest in science, in-depth assimilation of knowledge, and in the formation of independent learning skills.

This article discusses the importance, advantages, and effectiveness of using ICT in natural science lessons.

1. Integration of natural sciences and information technologies in primary education
Natural sciences allow students to understand the environment, conduct research and develop scientific thinking. The introduction of information technologies, on the other hand, allows to enliven the teaching process, increase interactivity and visualize complex concepts.

2. Methods of using ICT tools
Electronic presentations - the use of slides and animations during the lesson to explain the topic helps to focus students' attention.

Virtual laboratories - provide students with the opportunity to experiment in situations where it is not possible to repeat real-life experiments. Interactive whiteboards - create the opportunity to make lessons interesting and understandable using various visual materials. Digital learning platforms - for example, through online tests, interactive exercises and simulations, students' independent learning process develops.

3. The impact of information technologies on the learning process
Studies show that the use of ICT leads to the following results: Students' interest in the lesson increases. Helps to master complex concepts more easily. Develops students' independent research and analysis skills. Helps teachers' teaching process to be innovative and effective.

In the process of analyzing natural sciences for grades 1, 2, 3, 4, it can be seen that the tasks and exercises given in the textbooks themselves encourage you to use modern pedagogical technologies. For example, in the textbook of part 2 of the 1st grade natural science book, the task of filling in the cluster on the topic "The Benefits of Sports" is given. This pedagogical technology encourages children to think and, if organized in a competitive manner, to be quick and agile.

The following recommendations can be given to make the natural science lesson in primary grades interesting and effective:

1. Practical experiments and experiments Explaining topics through simple experiments (for example, water evaporation, magnetic force, light refraction). Assigning small experiments that can be carried out at home.

2. Using game elements Question and answer games such as “Who can find it faster?” Role-playing games on the topic (for example, the game “I am a scientific researcher”).

3. Nature walks and observations Take students to a garden or park and observe living nature. Assign students to regularly monitor changes in trees, birds, or air temperature.

4. Use interactive visual aids Explain topics using pictures, diagrams, and videos. Explain through models (skeleton, model of the solar system).

5. Use stories and fairy tales Explain natural phenomena in the form of an interesting story or fairy tale. Give students an understanding through characters (for example, the story “The Adventures of a Water Drop”).

6. Assign collective and independent tasks Work in groups and present the results Creative projects that can be prepared at home (for example, “My Plant Diary”).

7. Ask interesting questions and problems Discuss interesting problems related to everyday life (“Why is the sky blue?”, “How does rain form?”). Using the "Think and Find" method, students are given the opportunity to put forward various hypotheses.

During the pedagogical experiment-test method-research, modern pedagogical technologies that can be used in the process of teaching natural sciences were studied. In the process of teaching natural sciences in grades 1-2, it is more appropriate to use didactic games that are more practical.

Because at these stages of primary education, children are in a playful period, having just finished preschool education, and at the same time, tasks that encourage students to engage in physical activity occupy a greater place in other parts of the textbooks.

The textbooks for grades 3-4 are the opposite. These textbooks contain tasks that require students to think and sharpen their minds. It is worth noting that at these stages of primary education, it is appropriate to use the methods of "Brainstorming", "Case study", "T-method", "Mind Wheel" in natural science textbooks.

These methods arouse children's interest and make science lessons more lively and memorable.

To make science lessons more interesting and effective in primary grades, ICT (information and communication technologies) and modern technologies can be used in the following ways:

1. Interactive presentations and visual materials Slides (PowerPoint, Canva, Prezi) - Explain the topic through pictures, diagrams and animated animations.

Videos - Show short popular science videos to explain topics such as natural phenomena, animal life, plant growth.

2. Virtual laboratories and simulations Through platforms such as PhET Interactive Simulations, children can visually understand physical, chemical and biological processes. VR (virtual reality) and AR (augmented reality) applications - For example, using AR to study a 3D model of the solar system or human body organs.

3. Online testing and gaming platforms Kahoot!, Quizizz, Mentimeter – Test students' knowledge through tests and quizzes.

ClassDojo, Seesaw – Track and encourage student activity.

4. Digital lab journals and blogs Students can record their observations in Google Docs or OneNote. Create a blog and post interesting discoveries and projects related to natural sciences.

5. Using software and applications Google Earth – To explain geographical locations and natural landscapes to students. PlantSnap or PictureThis – To take pictures of plants and identify their names and characteristics. Star Walk 2 – An interactive program for observing stars and planets.

6. Robotics and STEM approach Making lessons more interesting using simple robots.

For example, conducting simple science experiments based on programming with LEGO WeDo or Scratch.

These technologies help increase students' interest in the lesson and apply their knowledge in practice.

The results of the study showed that lessons organized on the basis of modern pedagogical technologies significantly increased the level of students' knowledge acquisition.

The use of interactive methods has enhanced students' logical thinking and activity in the lesson. Multimedia tools and virtual laboratories have facilitated understanding of topics and increased students' interest in information and communication technologies. During the study, it became clear that the advantages of using modern pedagogical technologies in the lesson process are several:

- Effective use of time;
- Development of life and professional competencies;
- Improving the student's professional skills;
- Ensuring an individual approach;
- Broadening the student's worldview;
- Arousing students' interest in professions related to modern digital technologies.

In conclusion, the use of information technology in primary education natural science lessons can increase students' interest in the learning process and help to further consolidate knowledge. Lessons can be more effective through the use of interactive methods and ICT tools.

The results of this study show that digital technologies play an important role in teaching natural science, and these methods need to be further improved in the future.

References:

1. Ibragimova M.A., Tursunova N.M. "Boshlang'ich ta'limda axborot texnologiyalaridan foydalanish" – Nauchniy impuls, 2024.
2. Kodirov A.Sh. "Tabiiy fanlarni o'qitishda AKT vositalaridan foydalanish" – IJARTES, 2023.
3. Idiyeva G., Nurmurodova G. "Interaktiv metodlar va axborot texnologiyalarining ahamiyati" – ResearchEdu, 2023.
4. Qo'chqarova F.T. "Boshlang'ich sinflarda tabiiy fanlar va AKT" – New Journal, 2024.
5. Umarova H. "Matematika o'qitishda AKTdan foydalanish usullari" – ERUS, 2024

6. Olimov, Shirinboy Sharofovich, and Khusniddin Kupayinovich Khomidov. "Preparing Future Teachers To Solve The Tasks Of Patriotic Education Of Children And Youth." *The American Journal of Social Science and Education Innovations* 2.12 (2020): 132-136.