TECHNOLOGY OF USING MULTIMEDIA TOOLS IN NATURAL SCIENCE LESSONS (ON THE EXAMPLE OF GRADES 5-6)

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Abstract: This article examines the methodological foundations and effectiveness of using multimedia technologies in teaching "Science" lessons in grades 5-6 of general secondary schools. The study analyzes the role of virtual laboratories, 3D models, and interactive animations in increasing students' cognitive activity. The research results prove that multimedia tools improve the quality of education by visualizing complex natural processes.

Keywords: multimedia, natural sciences, Science, grades 5-6, virtual laboratory, visualization, cognitive activity, ICT, interactive learning

1. INTRODUCTION

In the modern education system, replacing traditional teaching methods with digital technologies in teaching natural sciences (elements of biology, physics, geography, and chemistry) has become a requirement of the time. In particular, the introduction of the subject "Science" for students in grades 5-6 serves to help them perceive the world as an integrated system. However, since students at this age are not yet fully prepared to understand abstract concepts, visualization in the teaching process becomes especially important.

Multimedia tools, which combine text, graphics, sound, video, and animation, activate both visual and auditory senses simultaneously. The relevance of this study lies in the fact that teaching natural processes such as photosynthesis, the water cycle, and atomic structure through multimedia technologies creates a strong foundation for developing students' scientific skills and understanding.

2. METHODS

During the research process, pedagogical experimental work was conducted with 5th-grade students of Secondary School No. 17. The following methods were used in the study:

1. Grouping Method

Students were divided into two groups:

- a control group (traditional teaching methods),
- an experimental group (multimedia-based lessons).

2. Multimedia Tools

The following technologies were used in the experimental group while teaching the topics "Photosynthesis," "The Solar System," and "Human Body Organs":

- PhET Simulations - for modeling physical and biological processes;
- Mozaik 3D - for studying natural objects in a 3D format;
- Quizizz and Kahoot - for assessing students' knowledge through interactive tests.

3. Observation and Testing

Students' level of understanding and classroom activity were evaluated through monitoring charts and post-lesson tests.

3. RESULTS

The experimental results showed that the groups taught with multimedia tools demonstrated significantly higher learning outcomes compared to the control groups.

The results revealed that, especially in the topic "Cell Structure," students in the experimental group who observed processes through 3D animation achieved results 23% higher than those in the control group. Multimedia tools helped students develop strong visual memory related to the subject matter.

4. DISCUSSION

The findings confirmed that the use of multimedia technologies in natural science lessons has several advantages:

• Reducing-abstractness:

For example, processes such as the movement of Earth's layers or the bonding of atoms are difficult to explain using only static images. Multimedia technologies demonstrate these processes dynamically.

• Saving-time:

Virtual laboratories save the time usually spent preparing laboratory equipment and allow more time for analysis and discussion.

• Approaches

Multimedia tools allow students to review materials repeatedly, which helps slower learners better understand the lesson content.

However, the teacher's role should not decrease when using multimedia technologies. Technology is only an auxiliary tool. Excessive use of video materials may turn students into passive observers. Therefore, organizing lessons based on the sequence "Video + Question-and-Answer + Practical Task" is considered the most effective approach.

5. CONCLUSION

The use of multimedia tools in "Science" lessons is one of the most effective technologies for improving educational quality. Considering the psychophysiological characteristics of students in grades 5-6, multimedia technologies contribute to:

1. Increasing students' motivation toward science;
2. Clarifying ideas about complex natural phenomena;
3. Connecting theoretical knowledge with practice through virtual experiments.

As a recommendation, schools should equip Science classrooms with modern smart boards and virtual laboratory software, while teachers' multimedia literacy should be continuously improved.

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