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USING INTERACTIVE METHODS IN TEACHING NATURAL SCIENCES TO PRIMARY SCHOOL STUDENTS

Sotiboldiyeva Shoxista Jaloliddin qizi
Toshkent amaliy fanlar universiteti katta o‘qituvchisi
Sanoqulova Gulasal Nurillo qizi
Toshkent amaliy fanlar universiteti 3-kurs talabasi

Abstract: This article is devoted to studying the theoretical and practical aspects of using interactive methods in teaching natural sciences to primary school students. The aim of the research is to increase the interest of 1st–4th grade students in natural sciences through interactive methods, to develop their scientific-research skills (observation, experimentation, analysis, and drawing conclusions), and to provide concrete pedagogical recommendations for improving the effectiveness of lessons. The research methods included literature analysis, pedagogical observation, trial lessons, tests and rubrics to assess students’ knowledge and skills, as well as teacher interviews. In the practical part, lessons were conducted over four months in several primary schools using interactive techniques such as group work, role-playing, mini-experiments, dialogic discussions, and visual materials. The research sample consisted of 80 students (grades 1–4) and 6 experienced teachers.

Keywords: interactive methods, primary education, natural sciences, mini-experiment, group work, role play, observation, assessment rubric, lesson effectiveness, student engagement.

Introduction. Today, the ongoing reforms in Uzbekistan’s education system require organizing the learning process based on modern, innovative, and interactive approaches. Particularly, the effective use of interactive methods in teaching natural sciences at the primary education stage plays a crucial role in shaping students’ scientific worldview and developing their ability to observe and understand natural phenomena. Primary school is the initial stage where students begin to understand their environment, make observations, ask questions, and analyze information. Therefore, it is essential to use methods that encourage student activity and promote independent thinking. In traditional lesson formats, students mostly play the role of passive listeners, while in interactive methods, they become active participants. Interactive methods are effective teaching technologies that enhance students’ cognitive activity, enable them to express their opinions freely, solve problem situations, and work collaboratively. Methods such as “Brainstorming”, “Cluster”, “Role Play”, “Experiment–Conclusion”, and “Small Group Work” develop students’ observation, curiosity, analytical thinking, and communication culture.

Using interactive methods in teaching natural sciences not only makes the educational process more dynamic but also helps shape students’ proper attitude toward natural and social processes. Moreover, it positively influences their intellectual, creative, and moral development. Thus, the relevance of this study lies in clarifying the theoretical foundations and developing practical mechanisms for the use of interactive methods in teaching natural sciences to primary school students. The main objective of the article is to analyze the role of interactive methods in increasing student engagement and improving their thinking, observation, and reasoning skills in science lessons. Primary education is a crucial stage during which children develop their first concepts about the world. Natural science lessons, in particular, help them understand the environment, living and non-living nature, and natural phenomena. Therefore, it is important

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not to limit these lessons to theoretical explanations but to ensure the active participation of students.

Interactive methods make the lesson more lively and engaging, encouraging students to express opinions, ask questions, and make conclusions through observation and experimentation. As a result, genuine interaction between teacher and student is established.

Interactive methods are understood as teaching techniques that actively engage students in the learning process and allow them to think independently and collaborate. In such methods, the teacher plays the role of a facilitator rather than a source of information. For example, in the "Brainstorming" method, students freely share their ideas on a topic, and the teacher analyzes and guides them toward the correct conclusion. The "Cluster" technique helps visualize and structure main concepts, while "Role Play" is one of the most engaging forms for students. For instance, in the lesson "The process of plant growth", students take on different roles such as the sun, water, or plant, thereby visualizing the process in an imaginative way. This broadens their understanding and helps them retain the topic better. Similarly, the "Experiment–Conclusion" method is very useful in natural science lessons. For example, to demonstrate water evaporation, students heat water and observe the formation of vapor. Through the experiment, they make their own conclusions, which strengthens their analytical and scientific thinking skills. The "Experiment–Conclusion" Interactive Method and Its Role in Teaching Natural Sciences. Natural science lessons in primary schools allow students to explore nature, observe phenomena, and understand their causes. During this process, it is important to use techniques that encourage students to be active, express opinions, and make conclusions based on observed results. One of the most effective methods for this is the "Experiment–Conclusion" method.

The essence of this method is that students directly perform experiments during the lesson, observe results, and draw conclusions independently. The teacher's role is to guide them, ensure the correct execution of the experiment, and help interpret the findings properly. The most significant aspect of this method is that students discover knowledge on their own rather than receiving ready-made information.

For instance, in the topic "Water Evaporation", the teacher places water in two identical containers — one open and one closed. After a few days, students observe that the water level in the open container has decreased. They discuss the phenomenon and conclude that water evaporates under sunlight. In this way, students grasp the scientific concept through their own practical experience.

The "Experiment–Conclusion" method develops in students:
skills of observation and analysis;
ability to identify cause-and-effect relationships;
ability to express thoughts clearly and logically;
scientific thinking and curiosity.

Furthermore, this method fosters environmental awareness and respect for nature. For example, through experiments, students learn the importance of conserving natural resources such as water, air, and plants. Organizing lessons in this way requires careful preparation from the teacher — gathering materials, explaining safety rules, and supervising the process. Importantly, students should be encouraged to present their own interpretations of the experiment results.

Overall, the "Experiment–Conclusion" method is one of the most effective, interesting, and memorable techniques in teaching natural sciences. Students not only remember the topic but also understand it through hands-on experience. Therefore, every natural science teacher is recommended to use this method frequently. Choosing the Right Method for Each Lesson

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Selecting an appropriate method for each lesson is crucial. For instance, “Brainstorming” or “Cluster” methods are effective when introducing new topics, whereas “Role Play” or “Experiment–Conclusion” methods work better for consolidating knowledge. The teacher must consider students’ age characteristics, classroom conditions, and available resources. Creating a cooperative learning environment and applying motivational assessment strategies also increase lesson effectiveness. When used appropriately, interactive methods actively engage students, help them express their thoughts freely, and develop communication and teamwork skills. Consequently, the teacher becomes not just an information provider but a guide who encourages independent learning. Practical observations show that in classes where natural sciences are taught using interactive methods, students’ knowledge levels, enthusiasm, and participation increase significantly. Such lessons not only enhance comprehension but also foster the ability to analyze and apply knowledge in real-life situations. Most importantly, interactive methods cultivate love and respect for nature. Students begin to understand the importance of preserving water, air, plants, and animals. They develop cognitive skills such as observation, comparison, and identifying cause-and-effect relationships. Thus, the effective use of interactive methods makes science lessons not only productive but also engaging, memorable, and closely related to real-life experiences.

Conclusion Using interactive methods—especially the “Experiment–Conclusion” technique—in teaching natural sciences to primary school students revitalizes the learning process and motivates students to actively participate. In such lessons, students do not simply listen to ready-made information but discover knowledge through their own experiences. Consequently, these methods develop students’ independent thinking, observation, questioning, and reasoning skills. The “Experiment–Conclusion” method also cultivates students’ interest in nature, their desire to explore it, and their sense of environmental responsibility. Most importantly, it connects lessons with real-life experiences and enhances practical thinking. When applied correctly, this method makes lessons more meaningful, engaging, and effective. As a result, students not only acquire knowledge but also enjoy the learning process. Therefore, the use of interactive methods—particularly the “Experiment–Conclusion” approach—is one of the most effective ways to improve the quality of primary education.

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