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METHODS FOR IMPROVING STUDENTS' LOGICAL THINKING IN NATURE SCIENCE TEACHING BY USING VARIOUS TASKS

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Abstract:
The purpose and application of logical tasks in the study of natural science textbooks in elementary school classes are discussed in this article.

Keywords: Task, capacity, natural, thinking, and outcome.

Introduction

Decree of the President of the Republic of Uzbekistan No. PF-5712 dated April 29, 2019, "On Approval of the Concept for the Development of the Public Education System of the Republic of Uzbekistan until 2030" sets forth the goal of ensuring the participation of students in international programs such as PISA, TIMSS, and PIRLS, aligning with the demands of a modern innovative economy.

The "Concept for the Development of the Public Education System of the Republic of Uzbekistan until 2030" further reinforces participation in these programs. According to the target indicators of the Concept, Uzbekistan aims to be among the top 30 leading countries in the PISA ranking by 2030.

Developed countries prioritize improving education quality and ensuring dignified participation in international assessment processes. To achieve this, a scientific literacy curriculum has been developed for teachers of pilot schools preparing for international assessments, including open-source task materials for training sessions. The curriculum considers state education standards, teacher needs, student age characteristics, and modern requirements.

These objectives aim to develop Uzbekistan’s national education system, enhance its attractiveness, and establish a national assessment system to measure students’ literacy in reading, mathematics, and natural sciences.

Studying international experiences in education quality assessment, conducting comparative analysis, collaborating with international and foreign organizations,

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and implementing international projects are crucial to developing a national assessment system that meets modern standards[1].

Enhancing Students' Scientific Literacy

Teaching natural sciences in primary school is essential for cognitive development, environmental awareness, and scientific literacy. Research-based learning, practical exercises, and interdisciplinary approaches help teachers create engaging science lessons that inspire students to explore and understand the world[2]. Early exposure to natural sciences not only benefits academic performance but also fosters a lifelong interest in science and environmental responsibility.

Practical Tasks in Natural Sciences

Using various tasks in natural sciences enhances knowledge retention, expands logical thinking, and strengthens memory. Below are some sample exercises:

1. Classification Task: Mark natural objects in green and human-made objects in yellow, then write their names.
2. Animal Movement Task: Describe how animals move. (For example: "A bird flies," "A butterfly flies.")
3. Plant Classification Task: Identify the plant species and write their names under the corresponding images.

[1] Scientific and Natural Literacy in International Assessment Programs. Page 4. Study Guide. Tashkent: 2023.

[2] "Natural and Socio-Humanitarian Sciences in New Uzbekistan" Republic Scientific-Practical Conference. Teaching Natural Science Lessons in Primary Grades and Its Importance. Page 44.

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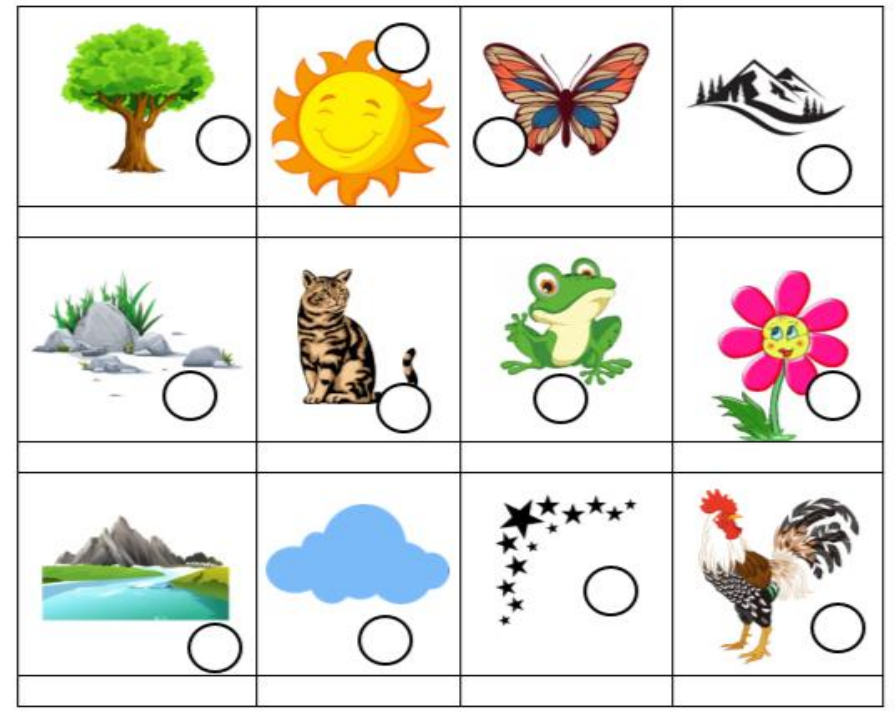

These exercises help students develop critical thinking, practical knowledge, and scientific skills essential for real-life applications.

1. Algae 2. Mosses 3. Ferns 4. Conifers 5. Flowering plants		
		

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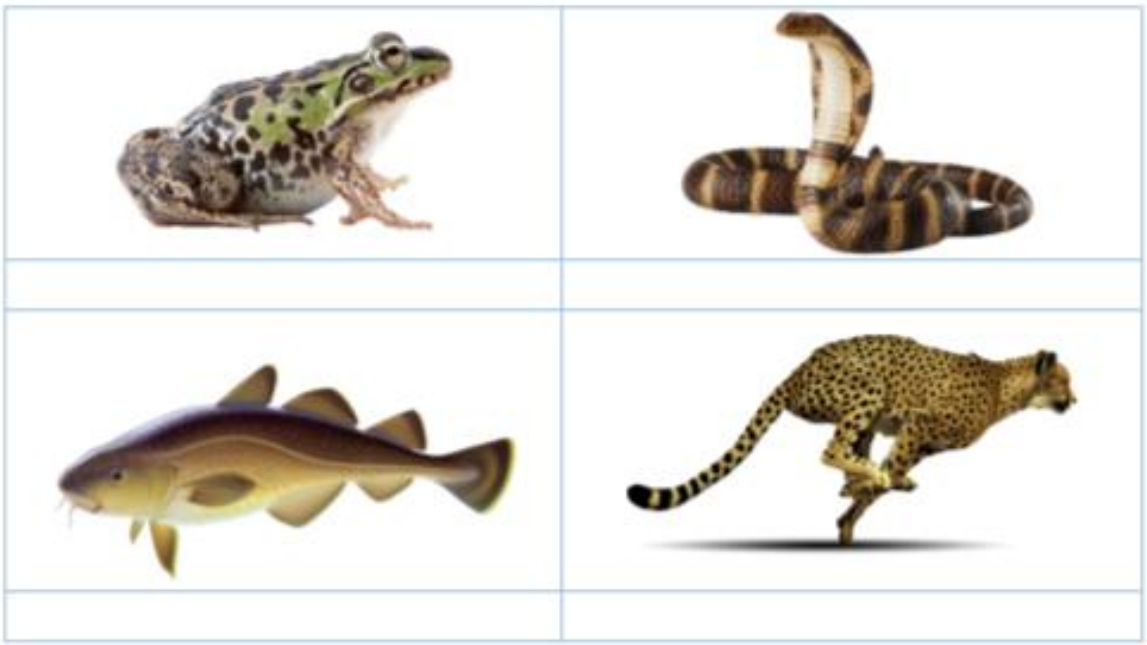

Find the names of the insects hidden in the boxes and color them with colored pencils.

Fly, dragonfly, bee, beetle, mosquito, wasp, ladybug								
F	**L**	**Y**	**M**	**O**	**S**	**Q**	**U**	**I**
D	**B**	**E**	**E**	**T**	**L**	**E**	**Y**	**T**
R	**E**	**R**	**V**	**T**	**A**	**F**	**L**	**O**
A	**E**	**Q**	**C**	**P**	**D**	**H**	**Z**	**U**
G	**W**	**A**	**S**	**P**	**Y**	**A**	**S**	**F**
O	**N**	**F**	**L**	**Y**	**B**	**U**	**G**	**P**

In summary, natural sciences are disciplines that test hypotheses about natural phenomena through experiments, leading to the generalization of theories or practical knowledge. In primary education, students are introduced to basic concepts in natural sciences. Each lesson should be integrated with other subjects. For example, early lessons should cover basic environmental behavior rules, such as not picking flowers or breaking tree branches, using folk pedagogy materials and linking them to moral education.

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Over time, natural sciences become more advanced, covering the surrounding environment, physical objects, soil, water, air, minerals, plants, animals, health, and environmental protection. For instance, lessons on natural resources emphasize their role as a foundation of the state and a significant part of the national economy. However, students also learn about the consequences of misuse, leading to resource scarcity.

Throughout the learning process, students are introduced to educational materials on natural phenomena. They are assigned independent research projects, exhibitions, poetry, and storytelling competitions related to nature. Important environmental protection laws, such as those found in the "Red Book," are regularly explained.

In this article, we have utilized assignments and tests related to natural sciences. Teachers can further develop and apply these tasks in their lesson plans.

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