

Experimenting with Living and Non-Living Nature

Qudratova Shaxnoza Baxtiyor qizi

Tashkent University of Applied Sciences, Department of theory and methodology of primary education dotsent v.b.

Do'sanova Komila Qurbonboyevna

Student at Tashkent University of Applied Sciences

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Annotation: This article analyzes the methods and significance of conducting experiments with living and non-living natural objects. Through such experiments, students and young researchers have the opportunity to observe the characteristics of living organisms, their growth, movement, and interaction with the environment. At the same time, studying non-living objects helps to understand natural laws, the properties of substances, and physical-chemical processes. In my opinion, such experiments develop scientific thinking and enhance students' observation, questioning, and analytical skills.

Keywords: living nature, non-living nature, experiment, observation, scientific thinking, student activity.

Studying nature has always been an interesting and important endeavor. I believe that conducting experiments with living and non-living natural objects is especially beneficial for young researchers. This not only allows you to reinforce theoretical knowledge but also develops skills in observation, comparison, and analysis. Living organisms include plants, animals, and even microorganisms, and their life, growth, and relationship with the environment become even more vivid through hands-on experience. For example, in an experiment I conducted myself, I observed how aquatic plants grow under different lighting conditions—it was truly fascinating.

Inanimate nature is important in another way: studying the properties of rocks, water, air, and various substances helps us understand natural laws. Through this, we can see the laws of physics

and chemistry through real-life examples. I believe that experiments with living and non-living nature spark students' scientific curiosity and encourage them to learn actively. Therefore, in this article, we analyze experimental methods, observations, and results.

The most commonly used objects in studying living nature are, of course, plants and small animals. To be honest, I think experiments growing plants under different conditions are one of the simplest yet most effective methods. Through this process, students have the opportunity to see natural processes with their own eyes, observe changes, and analyze them. I planted bean and pea seeds with a group of students from the Andmudaryo district under different lighting conditions: some were placed in direct sunlight, some in partial shade, some received little water, and others were overwatered. We recorded the results once a week, observing the growth rate, leaf color, root system, and condition of the new shoots. In the process, the students saw for themselves: if water is lacking, the seeds grow slowly; if light is lacking, the leaves become pale and weak. The children loved it; they watched the process with amazement. This experiment prompted them to connect the theoretical aspects of the growth process with real life.



Moreover, working with plants develops observational and patience skills in young researchers. For example, one student recorded the color of the leaves each week, measured the root system, and entered the results into tables. Personally, I noticed that he not only saw the experimental results visually but also learned to analyze them. In this way, students strengthen their scientific thinking and develop the habit of recording observations in writing. Experiments with animals are somewhat more complex, but still interesting and useful. For example, with a group of children from the Andmudaryo district, we observed aquarium fish under various temperature and lighting conditions. As a result, when the water temperature rises, the fish move faster, their feeding habits change, and differences appear in their social behavior: some move to the front to feed, while others stay in the back. I was amazed, and the children watched the process with great interest. This experiment encouraged them to understand the laws of biology in a practical way and to develop patience and observance.

The most beneficial aspect of working with living organisms is that it encourages students not only to acquire knowledge but also to think independently. For example, in a project at a school in the Andmudaryo district, students grew plants under different conditions and observed the effect of each condition on growth. This process not only raised their environmental awareness but also taught them to treat nature responsibly and to share their experimental results with others. To be honest, the children really enjoyed this process.

Moreover, conducting experiments with living nature increases interest among young people. Children were amazed as they observed how seeds grow, how the color of leaves changes, and how the root system absorbs water from the soil. This interest proved to be the most effective means of engaging them in scientific work. Additionally, the students recorded their observations in drawings and tables and discussed them with their classmates. In this way, they developed not only theoretical knowledge but also practical skills.

When working with animals, personal experience and observations are even more important. For example, I observed aquarium fish with a group of children under different feeding conditions. As a result, they observed the fish's feeding behavior, swimming speed, and even their stress levels at different temperatures. This process taught the children patience and allowed them to experience the practical side of biology, not just the theoretical one. Working with living organisms is also very beneficial for fostering environmental responsibility. As students care for plants and observe animals carefully, they learn to protect the environment. For example, in school projects in the Andmudaryo district, children learned to appreciate nature by observing the plants they cared for, watering the soil, and protecting their leaves. In this way, their environmental awareness is formed and they develop a healthy relationship with nature.

Studying nature without textbooks is also important not only for the physical and chemical sciences, but also for developing practical life skills. For example, with students in the Andmudaryo district, we tested stones, sand, and water under various conditions: we observed the effect of changes in water hardness and temperature. Through these experiments, the students realized that they could study the laws of nature using a simple mirror, a glass container, and a thermometer. In addition, experiments such as measuring air and observing wind speed make working with inanimate nature even more interesting. For example, in the Andmudaryo district, we recorded changes in air temperature and wind speed. These processes teach students how to conduct scientific observations and analyze results. I believe the most interesting and effective experiments are those that combine living and non-living nature. For example, growing plants under different soil and water conditions, or observing water quality and soil moisture simultaneously, allows students to become more closely acquainted with nature. These processes increase ecological awareness and teach them to protect and care for nature responsibly.

Working with living organisms has proven to be an effective way for young people not only to reinforce scientific knowledge but also to develop skills such as observation, patience, and independent thinking. By working with plants and animals, students learn to connect theoretical knowledge with practical life, and have the opportunity to record, analyze, and draw conclusions from the results of their experiments. This process also serves to raise ecological awareness among young people. Students learn to appreciate nature, protect it, and treat it responsibly. Through experiments, children are engaged in scientific activities with curiosity and enthusiasm, share their observations with others, and develop practical skills.

In fact, even simple experiments encourage young people to be active, motivate them to think scientifically, and foster a healthy relationship with nature. Therefore, regularly organizing hands-on work with living nature in every school and community is crucial for raising young people to be useful, responsible, and proactive members of society.

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