APPLICATION OF IMPROVING TEACHING METHODS OF NATURAL SCIENCES IN PRIMARY SCHOOL

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Abstract. *This article provides a scientific analysis of the theoretical and practical foundations of improving teaching methods of natural sciences in primary school. The cognitive development characteristics of young learners, as well as the influence of constructivist and competency based approaches on the teaching of natural sciences, are examined in detail. The article explains the role of experimental learning, digital technologies, observation methods, interdisciplinary integration, and project based activities in primary education. It also discusses how improved methodologies contribute to the development of scientific thinking, ecological awareness, independent reasoning, and the ability to apply knowledge in real life situations. The study concludes that modernized teaching methods play a significant role in increasing the quality of primary education.*

Keywords: *primary education, natural sciences, teaching methodology, constructivism, competency, experiment, observation, digital learning, integration, ecological awareness, project based learning.*

In this article, the issue of improving the teaching methodology of natural sciences in primary school is presented as a continuous and coherent scientific discussion. The cognitive characteristics of primary school pupils show that their thinking develops at the concrete operational stage. According to Piaget, learners at this age acquire knowledge more effectively through direct observation, hands on experience, and comparison of natural phenomena. Therefore, the teaching of natural sciences should rely not on abstract explanations but on practical activities, visual materials, experiments, and systematic observations. A constructivist approach is especially important in primary grades because it sees the learner as an active participant. The learner does not simply memorize ready made knowledge. Instead, the child identifies relationships between events, asks questions, investigates, and draws conclusions based on personal experience. This makes constructivism one of the most appropriate methods for natural science instruction since it aligns learning with real natural processes.At the same time, a competency based approach remains a fundamental principle of modern education. Learners are expected to develop skills such as observing, analyzing, conducting simple experiments, drawing conclusions, and adopting ecological responsibility. These skills emerge only when teaching methods are modernized, when the learning environment is interactive, and when learners participate actively rather than passively. The need to improve methodology is also connected with changes in how students process information. Contemporary learners prefer visual,

interactive, and dynamic learning formats. For this reason, digital technologies, simulations, virtual laboratories, three dimensional models, animations, and video experiments should be integrated into the teaching of natural sciences. These tools make complex concepts clearer and easier to understand.

Experimental learning stands at the center of improved methodology. Safe, age appropriate experiments help learners observe natural processes with their own eyes, record results, compare findings, and form conclusions. Experiments such as evaporation of water, the effect of heat and cold, the spreading of light, characteristics of magnets, or the conditions affecting plant growth help develop scientific thinking. Experiments not only provide knowledge but also stimulate curiosity and inquiry.Project based learning is another important method for primary grades. Through small scale projects, learners develop responsibility, independence, research skills, and teamwork abilities. Projects like “Daily observation of plant growth”, “Ecological map of the neighborhood”, “Energy saving at home”, and “Proposals for water conservation” help learners connect natural science knowledge with practical, real world issues. Interdisciplinary integration enriches the learning process even further. When natural sciences are linked with mathematics, technology, visual arts, and information technology, learners gain the ability to understand complex systems. For example, students can present experiment results as diagrams in mathematics class, create simple tools in technology class, and illustrate environmental processes in art class. These forms of integration strengthen the internalization of scientific concepts.The observation method is also central to improved methodology. Observation teaches learners to monitor nature systematically, compare processes, and record changes. Keeping observation journals, documenting seasonal changes, setting up a small observation corner in the school garden, and performing simple at home investigations help students develop analytical and logical thinking. These activities strengthen the learner’s connection with nature and support the growth of ecological awareness and personal responsibility.The effectiveness of improved methodology is reflected in the learners’ level of knowledge and scientific thinking. Learners gain a deeper understanding of concepts, recognize cause and effect relationships, justify their ideas, and process experimental results more effectively. A conscious attitude toward nature forms gradually, and ecological responsibility grows stronger. In addition, group work, collaborative experiments, and project discussions help learners develop communication and social skills. These competencies are important not only for academic success but also for everyday life.

In conclusion, improving teaching methods of natural sciences in primary school is a key pedagogical process that increases the effectiveness of learning and supports the all round development of the learner. When experiments, observations, integration, digital technologies, and project based learning are used in harmony, learners develop a deeper understanding of nature, think scientifically, and grow into environmentally responsible individuals who can apply knowledge in real life.

References

1. Karimov B., Gulomova H. Methods of Primary Education. Tashkent: O‘qituvchi, 2020.
2. Abdullaeva Q. Pedagogical Foundations of Teaching Natural Sciences. Tashkent: Fan va Texnologiya, 2019.
3. Yoldoshev J., Usmonboeva M. Pedagogical Technologies and Pedagogical Mastery. Tashkent: TDPU, 2021.
4. Piaget J. The Child’s Conception of the World. London: Routledge, 1997.
5. Vygotsky L. Mind in Society. Cambridge: Harvard University Press, 1978.
6. UNESCO. Science Education for Sustainable Development. Paris, 2019.
7. OECD. PISA Framework for Scientific Literacy. OECD Publishing, 2021.
8. Khodjayeva N. Experimental Teaching Methods in Primary School. Tashkent: Innovation, 2022.
9. Ganieva M. Digital Technologies in Education: Theory and Practice. Tashkent: Istiqlol, 2021.
10. Shadiev R. Issues of Interdisciplinary Integration in Primary Education. Tashkent: Education Publishing House, 2020.