



DIDACTIC SIGNIFICANCE OF OBSERVATION AND LABORATORY WORK IN GEOGRAPHY EDUCATION

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Abstract

This article analyzes the pedagogical significance of observation and laboratory activities in geography education, as well as their role in developing students' scientific thinking, research skills, and professional competencies. The didactic potential of observation and experimental methods, along with the stages of their organization, is scientifically substantiated. The mechanisms of perception, analysis, and generalization of natural processes by students through practical activities are revealed. The study also justifies the effectiveness of studying complex geographical phenomena through modeling in laboratory conditions. Based on the findings, scientific and methodological recommendations aimed at improving practice-oriented and competence-based approaches in geography education have been developed.

Keywords: Geography education, practical activities, observation method, laboratory experiment, scientific thinking, research skills, professional competence, didactic approach, pedagogical process, modeling.

Introduction

GEOGRAFIYA TA'LIMIDA KUZATUV VA LABORATORIYA MASHG'ULOTLARINING DIDAKTIK AHAMIYATI

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Annotatsiya:

Mazkur maqolada geografiya ta'limida kuzatuv va laboratoriya mashg'ulotlarining pedagogik ahamiyati, ularning talabalarda ilmiy tafakkur, tadqiqotchilik ko'nikmalari va kasbiy kompetensiyalarni shakllantirishdagi o'rni tahlil qilingan. Shuningdek, kuzatuv va tajriba metodlarining didaktik imkoniyatlari hamda ularni tashkil etish bosqichlari ilmiy asosda yoritilgan.



Amaliy mashg‘ulotlar orqali talabalar tomonidan tabiiy jarayonlarni idrok etish, tahlil qilish va umumlashtirish mexanizmlari ochib berilgan. Tadqiqotda laboratoriya sharoitida modellashtirish asosida murakkab geografik hodisalarni o‘rganishning samaradorligi asoslab berilgan. Natijalar asosida geografiya ta’limida amaliy yo‘naltirilgan va kompetensiyaviy yondashuvni takomillashtirishga qaratilgan ilmiy-metodik tavsiyalar ishlab chiqilgan.

Tayanch iboralar: geografiya ta’limi, amaliy mashg‘ulotlar, kuzatuv metodi, laboratoriya tajribasi, ilmiy tafakkur, tadqiqotchilik ko‘nikmalari, kasbiy kompetensiya, didaktik yondashuv, pedagogik jarayon, modellashtirish.

Аннотация:

В данной статье анализируется педагогическое значение наблюдений и лабораторных занятий в географическом образовании, а также их роль в формировании научного мышления, исследовательских навыков и профессиональных компетенций у студентов. Освещены дидактические возможности методов наблюдения и эксперимента, а также этапы их организации на научной основе. Раскрыты механизмы восприятия, анализа и обобщения природных процессов студентами в ходе практической деятельности. В исследовании обоснована эффективность изучения сложных географических явлений посредством моделирования в лабораторных условиях. На основе полученных результатов разработаны научно-методические рекомендации, направленные на совершенствование практико-ориентированного и компетентностного подходов в географическом образовании.

Ключевые слова: географическое образование, практические занятия, метод наблюдения, лабораторный эксперимент, научное мышление, исследовательские навыки, профессиональная компетенция, дидактический подход, педагогический процесс, моделирование.

In geography education, practical activities, in particular observation and laboratory exercises, are an integral part of the educational process and are an important didactic tool for consolidating and deepening students' theoretical knowledge and linking them with real natural processes. In the context of the



modern educational paradigm, the practical orientation of knowledge and the competence to apply it in real-life situations are recognized as one of the main criteria. Through these methods, students have the opportunity to directly perceive natural phenomena and processes, analyze their essence, determine cause-and-effect relationships, and draw scientifically based conclusions. At the same time, observation and experimental activities activate students' cognitive processes, directing them to independent research, research activities, and solving problem situations.

In geography education, practical exercises are considered not only a means of consolidating theoretical knowledge, but also a complex pedagogical mechanism that serves to systematize, generalize, and apply it in new conditions. In particular, the use of the observation method forms a conscious attitude towards the environment in students, while laboratory experiments allow for a deep understanding of the essence of complex natural processes through modeling. From this point of view, the organization of observation and laboratory exercises on a scientific basis in geography education, the improvement of their methodological support, and their integration with modern pedagogical approaches are emerging as an urgent scientific and pedagogical problem. In-depth study of this issue is of great importance in the formation of scientific thinking, analytical approach, and professional competencies in students. The observation method in geography education is recognized as one of the leading didactic approaches, which is an effective pedagogical tool that allows students to directly perceive natural phenomena and processes, understand their essence, and determine cause-and-effect relationships. This method activates the student's cognitive activity, turning him from a passive receiver into an active research subject. During the observation process, students directly interact with the real natural environment, acquire the skills of collecting empirical data, analyzing them, and drawing scientific conclusions. As a result, they develop a scientific outlook, logical and critical thinking, an analytical approach, and independent decision-making competencies. According to the content of observation activities, they are divided into meteorological, astronomical, and phenological directions, each of which serves to study geographical processes in different aspects. Through meteorological observations, atmospheric phenomena - air temperature, pressure, wind direction and strength, cloudiness, and precipitation - are systematically studied, and the dynamics of their change in time and space



are determined. Astronomical observations, on the other hand, help to understand the interaction of the Earth with the cosmic environment and develop spatial thinking. Through phenological observations, seasonal changes in nature, stages of development of the plant and animal world, and their connection with climatic factors are analyzed on a scientific basis. From this perspective, the observation method is an important pedagogical mechanism that helps students develop a comprehensive understanding of natural and geographical laws.

In the process of geographical observations, students acquire skills in working with special equipment - a thermometer, barometer, compass, weather vane and other measuring instruments, and develop the skills of systematically recording, processing and analyzing the results obtained. Long-term and regular observations are especially important, on the basis of which students have the opportunity to independently draw scientific conclusions, identify patterns and apply forecasting elements. This serves to increase their scientific and research potential.

At the same time, laboratory exercises are an important methodological tool in geography education that serves to provide a deep understanding of complex natural processes. Through experiments organized in laboratory conditions, students study phenomena that are difficult to observe in real conditions or require a long time based on modeling. In particular, geological processes in the lithosphere, physical phenomena in the hydrosphere or climatic changes in the atmosphere are explained through special experiments. This approach allows students to gain a deeper understanding of the internal mechanisms of phenomena, analyze the stages of their development and determine their causes. Laboratory experiments create the opportunity not only for observation, but also for active research. During the experiment, students develop the skills to assess the influence of various factors, compare results, generalize, and draw scientific conclusions. This, along with the development of their creative and research abilities, serves to form a scientific approach.

The organization of practical classes in geography education based on modern pedagogical approaches, especially the introduction of a competency-based approach, is of great scientific and practical importance. Within the framework of this approach, students are systematically formed in the field of geographical activities, local history, and methodological competencies. These competencies serve to integrate the student's theoretical knowledge with practical activities,

analyze real problems and develop effective solutions, as well as ensure their readiness for professional activity. Thus, observation and laboratory classes form an interconnected didactic system in geography education, which serves as an important factor in developing students' scientific thinking, forming them as independent thinkers and specialists ready for research activities.

In conclusion, the scientific organization of observation and laboratory exercises in geography education is one of the important pedagogical factors that serve to increase the effectiveness of the educational process. These types of practical activities provide an integral integration of theoretical knowledge with real processes, and form the skills of students to apply knowledge in practical situations, analyze and generalize them. Observation and laboratory exercises play an important role in developing students' scientific thinking, forming an approach characteristic of research activities, and developing the competencies of independent and informed decision-making in problem situations. In particular, through these exercises, students have the opportunity to deeply understand the essence of natural phenomena, determine their cause-and-effect relationships, and draw scientific conclusions. At the same time, practical exercises are an important tool in improving students' professional training, preparing them for future pedagogical and scientific activities. They also develop personal qualities such as independence, initiative, creative approach, and reflective thinking in students. Therefore, it is necessary to improve practical training in geography education on the basis of modern pedagogical technologies, in particular, competency-based, activity-oriented and integrative approaches. Their systematic introduction into the educational process, methodological enrichment and integration with innovative tools should be considered one of the priority tasks of today's education system. This, in turn, will serve to form competitive, scientifically-minded and practical specialists.

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