

ABSTRACT

Dissertation by Shakirova Nurzhanat Dalelova for the degree of Doctor of Philosophy (PhD) in the speciality «6D011600 – Geography» on the topic: **"Formation of knowledge about the environment based on climate concepts in the context of updated content from geography."**

The relevance of the research. Since geography is a multidisciplinary science, it is directly related to all-natural science disciplines in terms of content and practicality. Features of knowledge of the environment and the formation of a conscious attitude are laid down in the school. The ability of the education system to influence the worldview of students is high.

From this point of view, geographical education is faced with forming geographical thinking that considers the laws of the geographical shell, functional literacy of climate education, and the main component of the environment.

Through the implementation of geographical thinking skills, it is possible to form knowledge about the environment. In particular, climate concepts play a unique role as the main component of the environment.

The correct formation of geographical concepts in the study of physical geography sections has a great place in teaching geography. Concepts are built based on perception, feeling, and awareness. Objects and phenomena that have given it a specific name, such as lightning, snow. The main requirement for a concept is its interpretation in one sense and the presence of a definition. An explanation can only give a generalized concept. However, the very nature of any simple problem is determined only when there is an apparatus of concrete concepts. Given that knowledge about the environment is built based on concepts, laws, and theories, we can see that the concepts are clarified in the development of science, and the theory's conceptual apparatus is improved. The implementation of forming understanding contributes to the successful resolution of the following stages in the cognitive process. The importance of concepts as a component of geographical knowledge is increasing in the study of climate. After all, climate, being one of the components of the geocomplex, the physical and geographical nature of the environment can affect the mood and soul of a person as a whole.

The impact of climate on human life and economic activity is vital, so when organizing work, recreation, and life effectively, it is necessary to consider the climatic conditions of the territory. The weather and climate are considered from the point of view of comfortable conditions for a person, ensuring health and high labour productivity. Climate directly impacts the human body in terms of atmospheric pressure, temperature, humidity, wind regime, solar radiation, precipitation, and atmospheric composition. If their parameters exceed the optimal level, unfavourable living conditions arise. There fore, it is better to consider the climate as a place of life - a component of the environment.

The environment is a complex of physical, geographical, biological, social, cultural and political conditions that determine the way and nature of the life of

humans and other living organisms. Climatic conditions here, depending on the territory's scale, are distinguished as macroclimate, mesoclimate, microclimate and reflect the climatic character of this landscape.

Providing scientifically based concepts of climate phenomena and trends and explaining the importance of climate as a component of the environment based on general geographical patterns and connections is one of the most pressing problems in geographical education.

We were guided in this work's performance by the works of scientists of each period, who wrote about the climate and its teaching: on the psychological and pedagogical foundations of the study were used studies of the cognitive process by L.S. Vygotsky, S.L. Rubinshtein, B.G. Ananyev, theories of the formation of geographical concepts by P.Y. Galperin, N.F. Talyzina, A.E. Bibik, V. Dorn, V. Yan, V.A. Shchenev, V.A. Korinskaya, which gave the action approach's theory, theory of graph transfer of geographical concepts by A. A. Polovinkin, works on the methodology of climate education by U.S. Andryushova, E.Y. Chernikhova, L.Z. Emuzova, I.V. Dushina, G.A. Ponurova, fundamental works of Geographers such as B.P. Alisov, A.I. Voeykov, A.S. Monin, who conducted climate research and defined the climate, the works of Kazakhstan geographers such as A.S. Beisenova, A.R. Medeu, K.D. Karpekov, Sh.Sh. Karbaeva, B.K. Asubaev were guided. Authors of textbooks from Kazakh component of content written on the updated content of education K.D. Kaimuldinova, B.Sh. Abdymanapov, S. Abilmazhinova, R.A. Karatabanov, and other works.

In the context of the updated content of education, the educational process's organisation in such a way as to guide the development of creative abilities and stable cognitive interests and free orientation of students in changing living conditions indicates the relevance of the research work. The development of a methodology for forming the necessary climatic knowledge and skills in the section "atmosphere" allows us to improve the effectiveness of training and the quality of education.

In the updated educational program, the content of educational material has changed somewhat connected with the transition to spiral training. The level of content and complexity of the material in classes and training levels has increased.

In the study, the need to find effective methodological ways to form knowledge about the environment based on climate concepts was identified. In this regard, an analysis of the content of education based on climate concepts was carried out. Based on the analysis results, there are **contradictions** between the content of education provided in educational programs based on climate concepts and the implementation of actual practical activities.

The study of the content of knowledge based on climatic concepts on geographical material during the entire training cycle, arranged at Spiral levels, determines our research's relevance in finding solutions to these contradictions. This relevance of the problem under consideration was the basis for choosing our research topic as **"Formation of knowledge about the environment based on climate concepts in the context of updated content from geography"**.

The purpose of the research.

Theoretically substantiate the formation of knowledge about the environment based on climate concepts in the updated content of geography education and develop a practical methodology for teaching it, proving the effectiveness of practice.

The object of the research: the process of teaching geography at school

The subject of the research: formation of students' knowledge about the environment in the context of updated content

The hypothesis of the research: if in the context of the updated content chosen by analyzing the experience of teaching the content of knowledge about climate and the environment and the peculiarities of studying the environment as national values in the content of geographical education, a model for building a methodological system for teaching geography is determined, and a methodology for forming students' knowledge of geography about climate concepts and the environment is developed at the school, the quality of geographical education will increase since climate concepts are one of the components of knowledge about the environment.

The tasks of the research:

- theoretical justification of the formation of students' knowledge of the environment through climate concepts in the process of studying geography through the analysis of foreign and national experience, the study of national values;

- creation of a structural and content model of climate and environmental education;

- development of a methodology for forming students' knowledge of the environment through climatic concepts in geography at the school;

- test the effectiveness of the proposed methodology in practice.

The theoretical and methodological basis of the research is the ideas of philosophical humanization of a person as a subject of activity and the organization of the pedagogical process in the context of a systematic approach in educational organizations, the doctrine of personal development, the theory of the gradual formation of mental activity, the theory of action, the theory of the content of education, the theory of the content of education, the theory and methodology of teaching the course "geography", the state program for the development of education and science in the Republic of Kazakhstan for 2020-2025, Law of the Republic of Kazakhstan "About Education", fundamental works of leading teachers-scientists of the country and near and far abroad on the problem of research, educational programs.

The theoretical significance of the research: the results of the research work can be widely used in general education schools, institutions of secondary vocational education, in the system of training and advanced training of teachers.

The methods of the research: theoretical analysis, generalization, comparison, and observation of research tasks;

- pedagogical experiment, survey, interview;

- processing of experimental data by mathematical calculation methods.

The main arguments of a dissertation to be defended:

- the content of knowledge about the climate and environment is based on the experience of teaching, and the study of the environment based on national values

in the content of geographical knowledge is the basis for the implementation of practical activities of students;

- the creation of a structural and content model of education about climate and the environment in the conditions of updated content will be aimed at improving the quality of knowledge in geography;

- the methodology of forming students' knowledge of geography at the school about climate concepts and the environment creates conditions for improving the quality of geographical education.

The scientific novelty of the research:

- in the process of teaching geography, the formation of students' knowledge about the environment based on climate concepts is theoretically justified;

- a structural and content model of climate and environmental education has been created;

- the school has developed a methodology for forming students' knowledge of the environment through climate concepts in geography.

The stages of the research:

The dissertation research was conducted in three stages from 2017 to 2020.

At the first stage (2017-2018), the possibilities of the practical application of the course's potential were determined. In the context of the updated content, a theoretical analysis of reference documents and psychological, pedagogical and methodological literature on teaching climatic processes in geographical education was carried out.

At the second stage (2018-2019), a model of the methodological system of education formation has been created. Methodological conditions have been developed for its effective implementation. Academic tasks with expected results were created and implemented. A formative pedagogical experiment was conducted using tasks in the author's version. Besides, a foreign scientific internship was conducted, where scientific articles written within the framework of world experience were analyzed.

At the third stage (2019-2021), the pedagogical experiment's obtained results were subjected to quantitative and qualitative analysis, followed by theoretical generalization and interpretation. Scientific and methodological works have been prepared and published in the updated curriculum content on the issue under consideration. Also, the results of the research work were published, systematized and formalized.

The base of the research: school-gymnasium No. 136, which was named after M. Dulatuly in Almaty, Abai KazNPU, Institute of Natural Sciences and Geography, Department of "Geography, ecology and tourism".

The approbation of the research results.

Based on the materials prepared for the research work and the author's doctoral dissertation, 13 scientific articles published in domestic and foreign publications (Ukraine, the Czech Republic, the Russian Federation) and the works "methodological guide" to the textbook "geography" of the 11th grade, approved by the Ministry of Education and Science of the Republic of Kazakhstan. The author collected these published scientific papers independently through individual search,

brought them into the system, carried out in-house processing, and made their conclusions. The main issues covered by the research work and the results of the research were discussed at international and national scientific and practical conferences (2017-2020) held in the domestic cities of Almaty, foreign Moscow (Russian Federation), Kyiv (Republic of Ukraine), Prague (Czech Republic). In the 2019-2020 academic year, the Mektep publishing house tool was tested in experimental schools for one year and introduced into the educational process in 2020.

The publications based on the results of the research:

The main scientific results and results of the research work were published in national and foreign publications, at international scientific-theoretical and practical conferences as 13 scientific articles and "methodological guidelines" for the textbook "Geography" of the 11th grade approved by the Ministry of Education and Science of the Republic of Kazakhstan. Of these, one article was published in the Scopus database, four articles in journals included in the list recommended by the committee for quality assurance in education and science of the Ministry of Education and Science of the Republic of Kazakhstan, four articles in the collection of international scientific conferences, one article at the All-Russian Conference, one article in the International Journal, one article in the bulletin of KazNPU "Natural Sciences-Geography Series", one article in the national journal. The handbook for teachers of the 11th grade recommended by the Ministry of Education and Science of the Republic of Kazakhstan, published in the publishing house "Mektep", consisted of two parts and was published in Kazakh and Russian for natural-mathematical and social-humanitarian directions in 2020.

The structure and content of the dissertation:

The dissertation consists of an introduction, two sections, a conclusion, a list of references and appendices.

The introduction presents the relevance, purpose and objectives of the study, the form and subject of the study, research methods and expected results.

In the first section named "theoretical and methodological foundations of the formation of knowledge about the environment based on climate concepts", the experience of teaching the content of knowledge about the climate and the environment, the features of studying the environment based on national values in the content of geographical education are considered. The structural and content model of education about the climate and the environment is presented, reflecting the methodological system of teaching geography in the context of updated content.

In the second section named "methodology of teaching the content of knowledge about the environment based on climate concepts in the context of updated content", the issues of implementing the formation of students' knowledge about the environment based on climate concepts in the process of teaching geography were considered. Besides innovative approaches to teaching climate changes in the environment to students in geography at the school, the results of pedagogical experience were presented.

The conclusion consists of a short conclusion based on the dissertation research results, conclusions on solving the tasks set, and recommendations for the actual use of the results obtained.