



**Pedagogical Principles of Improving the Teaching Methodology of the  
Fundamentals of Topography and Cartography in Innovative  
Educational Conditions**

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**Abstract:** *This article presents ideas on the theoretical foundations, specific features and pedagogical views of improving the methodology of teaching topography and cartography basics in the conditions of innovative education.*

**Keywords:** *Topography, cartography, innovation, method, pedagogical technology, brainstorming, Case study method, chain of terms, pedagogical principles.*

Topographic maps differ from geographic maps by the methods of depicting objects and reality, the area they occupy, and their scales. On topographic maps, distances are uniformly reduced everywhere, and each object is depicted with special conditional symbols. Topographic maps are used in various sectors of the national economy and serve as a basis for creating small-scale geographic maps. Compilation of topographic maps mainly depends on the conditional symbols used, because these symbols must be similar to the object in the place to a certain extent, the shape of the object and it should be shown in its place. When conditional symbols are used, they are displayed according to the scale of the card, if there are objects that do not correspond to the scale of the card, they are displayed with conditional symbols without scale.

Various colors are used to increase the visibility and ease of reading topographic maps, and topographic drawings are used to increase their quality. Topographic maps are made at different scales. Topographic maps are made at scales of 1:10,000, 1:25,000, 1:50,000, 1:100,000, 1:200,000, 1:300,000, 1:500,000. Maps with a scale of 1:10000, 1:25000 are drawn directly on the spot, and the rest are made based on these maps. Depending on the scale, topographic maps are divided into large-scale (1:10,000, 1:200,000) and general topographic maps. Since topographic maps are of different scales, the areas are also of different sizes and are depicted on separate sheets. To facilitate the use of these cards, they are divided into the following elements (Fig. 1).



**Figure 1. Elements to facilitate the use of cards.**

Mathematical elements include nomenclature, scale, level grid and map frame, geographic elements include the content of the map, and auxiliary elements include various drawings and explanatory letters in addition to the frame.

In order to facilitate the use of topographic maps, they are marked in a certain order, that is, the sheets of the cards are limited to certain meridians and parallels, and the system of marking the sheets of these cards is called nomenclature. The nomenclature of topographic maps defines the size of each sheet of the map and the location of this sheet on the surface of the earth. The nomenclature of the cards is based on the international 1:1 000 000 scale nomenclature. For the nomenclature of this 1:1,000,000 map, parallels are drawn every 40 from the equator to the poles, and these are designated by the capital letters of the Latin alphabet and are called lines. The range of meridians is divided every 30 and 30 pieces are formed and they are called zones.

Maps with a scale smaller than 1:1,000,000 are called small-scale or geographical maps. Maps with a scale of 1:200,000 to 1:1,000,000 are called medium-scale or topographic maps, and maps with a scale of 1:100,000 or more are called large-scale topographic maps. The science of teaching methodology of geography not only relies on the science of didactics, but also provides important information for its development. For example, assessment of students' geographical knowledge, skills and abilities, geographical imagination, understanding, formation of a system of ideas, etc. The science of psychology studies the general laws of the mental activity of students, while the methodology of teaching geography studies the mental activity of students, their aspects related to the acquisition of geographical knowledge. Without taking into account the age, knowledge, and thinking ability of the students in the teaching of the subject of geography, it is impossible to effectively influence their educational activities. Because of this, geography teaching methodology is closely connected with the science of psychology. The methodology of geography education is inextricably linked with the science of ecology.

Geography education methodology is also connected with history, language and literature and other humanities. In school geography, studying the development of geographical knowledge, the nature of each continent and country and the history of its development is related to the study of historical sources. The correct spelling of geographical names, their interpretation, origin and meaning are determined based on the laws and rules of linguistics. In school geography, bright expressions, interpretations and descriptions from fiction are used in the study of the world, countries and territories, in explaining the components of the geographical shell and its processes to students. Geography teaching methodology is closely connected with chemistry, biology and agricultural sciences. In the study of the chemical composition of the geographical crust, pollution of nature by chemical substances and ways to prevent them, school geography is based on the achievements of the science of chemistry.

School geography is based on the achievements of the system of biological and agricultural sciences in studying the characteristics of the soil, vegetation, animal world and the cultivation of various crops, which are the main components of the geographical crust. School geography is based on the achievements of the sciences of mathematics, statistics and information technologies in the summarization and analysis of data in the education of geography, and the use of modern technical tools. Currently, new pedagogical technologies are being used in geography education and the scientific-methodological bases of their use are being developed. Geography education in this area relies on the achievements of the science of new pedagogical technologies.

From the 17th century, special expeditions to study the nature of the Earth's surface began to be organized. Major scientific and practical results were obtained based on the collection of geographical data and their generalization. Geography was not taught as a separate subject until the middle of the 17th century. Geographical knowledge was given as part of country studies courses. Due to the influence of great geographical discoveries and the results of the stage of scientific geographical research, attention to the science of geography increased. As a result, from the second half of the 17th century, geography was included in the curriculum as a separate subject in the schools of Western European countries. Since the 18th century, geography has been taught in all schools. At the beginning of the 18th century, according to the specialization of schools, a certain branch of geography was taught. Mathematical geography was taught in navigation schools, and political geography was taught in others. Political geography mainly consists of descriptions of countries.

At the beginning of the 18th century, a textbook was published by I. Guebner (1719). His textbook was called "A Brief Description of the Globe". During this period, the great Dutch scientist Varenij wrote the famous work called "General Geography". In the first half of the 18th century, geography teaching methodology developed in Holland and Germany. Many textbooks have been published. But the content of these textbooks mainly consisted of geographical names, information and numbers. The students' activity consisted of memorizing them. M. V. Lomonosov and Kh. Chebotarev made a great contribution to the development of the science of geography and its teaching methodology in Russia. In the second half of the 18th century, Kh. Chebotarev published a textbook entitled "Geographical and methodological description of the Russian Empire". In this period, geography was taught in two classes: general geography in the III class, Russian geography in the IV class. At the beginning of the 19th century, geography education was introduced in all educational institutions in European countries and Russia. The subject of geography is studied from the 3rd to the 8th grade of the 7th year gymnasiums. The amount of weekly hours for the subject of geography is 14 hours. During this period Ye.F. The subject of geography was studied according to the textbooks of Zavyalov, K.P.Arsenov. In the development of geography education in the second half of the 19th century, K.D. The works of Ushinsky, D.D. Semenov were important. K. D. Ushinsky developed several principles of teaching geography. D.D. Semenov wrote a textbook called "Uroki geografii" (Geography lessons). In the development of geography education at the end of the 19th century, the methodology of the German scientist Oberländer occupies a significant place. He wrote a textbook called 'Oberländer's Methodology of Geography'. The following methods are distinguished in this textbook: -analytical - first studying the Earth as a whole and then studying its parts; -synthesis-first studying individual places and then studying the Earth as a whole; -constructive-students get acquainted with the main forms of the Earth's surface while drawing a map; -connective (associative) great attention is paid to the interaction between the studied events and events; -grouping is based on comparing groups of the same geographical object, events and processes.

At the end of the 19th century and the beginning of the 20th century, many textbooks and manuals were published in the Uzbek language. During this period, the development of the science of geography, at the same time, attention to teaching methods was extremely high. One of the important and scientific-methodical aspects of the textbook is that it is written from the point of view of Turkestan, from the point of view of the level of knowledge of the people of Turkestan. When each topic in the textbook is covered, an example of the nature, economy, and population of Turkestan is

given, or this knowledge is compared with the knowledge of Turkestan. So, we have every reason to call Makhmudhoja Bekhbudi one of the founders of the use of local history information in textbooks and the formation of concepts of love for the young generation and the motherland. Because universal knowledge is closely connected with local knowledge. In addition, the textbook gives a clear and honest assessment of the state of teaching secular knowledge in Turkestan at the beginning of our century and the level of knowledge of the public and scholars.

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