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THE ANALYSIS OF THE PRACTICE OF FORMING CARTOGRAPHIC COMPETENCE OF FUTURE SPECIALISTS IN THE FIELD OF CARTOGRAPHY

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ABSTRACT

In this research paper, we consider the questions about the importance of cartographic training of future specialist cartographers. An analysis of the practice of forming the cartographic competence of future cartographers has been investigated. The personality oriented approach of training has been defined as the main one in substantiating the methodological principles of the process of formation of cartographic competence of future cartographers.

Key words: professional training, competency based approach, professional competence, cartographic training, cartographic competence.

INTRODUCTION

The formation of the cartographic competence of future specialist cartographers is an urgent problem of modern engineering education. Therefore, cartographic competence today is considered to be one of the most important vital qualities of a cartographer, since the ability to possess cartographic knowledge, skills, and readiness to use them is necessary in modern life for every citizen of society. Acting as a component of the professional competence of future cartographic engineers, cartographic competence is considered as an integral characteristic, which includes a complex of cartographic knowledge and skills; possession of logical operations in fundamental and special disciplines; the ability to carry out independent search and research activities; striving for professional and personal development. In its structure, it contains special competencies that are formed and developed by improving the organizational and pedagogical conditions during training at a higher educational institution.

The study of scientific and methodological literature, the study of the experience of cartographic training of students in universities revealed some problems that, in our opinion, require

detailed study and solution. Firstly, among local scientists, there is no single approach to determine the essence and content of the concept of "cartographic competence" of a student of a higher technical educational institution. Secondly, in recent decades, due to a whole range of reasons, the gap between the level of cartographic training of university graduates and the requirements that society imposes on them has increased. At the same time, it should be noted that unambiguous ways to solve the problem of increasing the level of cartographic training of students, ensuring the achievement of the learning goal, have not yet been determined. Thirdly, in the process of professional training of freshmen, the issue of using teaching technologies that take into account their different initial level of training, individual characteristics and opportunities for their personal growth in the process of studying cartographic disciplines has not been considered before. Despite the great interest of scientists, the problem of developing the cartographic competence of future cartographers in the process of professional training remains relevant and insufficiently developed in the theory and practice of vocational education. An analysis of modern concepts and provisions offered by the domestic system of teacher education proves the relevance of reforming the professional training of future cartographers and requires fundamentally new approaches to the content of their cartographic training.

MAIN PART

Cartographic knowledge is of great importance in the preparation of graduates not only in the field of geodesy and cartography, but also in the field of geography, hydrology, meteorology, land use and land cadastre. The cartographic method of research is currently an effective tool for understanding the patterns of spatial distribution, as well as the structure of geographical objects and phenomena, their relationships, a means of monitoring and forecasting.

The ability to work with maps and obtain the necessary information from them becomes an important element of mass cartographic literacy and a culture that develops a person. The importance of cartographic preparation increases with the growing understanding of the role of the geographical map as a kind of document of communication, reflecting the level of development of society, its culture and perception of the world. The map, unlike other means of communication, offers information not only sequentially, but also in the form of spatial graphic combinations that perceive at once simultaneously, as integral graphic images. We can say that the map is the international language of the cultural community of people, which help to

master the multidimensional geographical space. A geographical map can be considered as the highest synthesis in the transmission of information about the state and changes characteristic of various territories [5].

A.M. Berlyant is actively involved in the issues of cartographic training and geographical education. Thus, his works [1-5] reveal both aspects of improving cartographic training and geographical education in general, as well as individual issues of cartography. For example, he emphasizes the need for a full-fledged cartographic support of lectures on cartography and proposes to solve this problem by means of computer presentations. He was the first to formulate the content of a new scientific direction - geoiconics, as a branch of knowledge that studies the properties of all geoimages: maps, electronic maps, aerial and space images, stereo images and computer animations, three-dimensional models, etc. He proposed a unified theory of geoimages, gave their classification and systematization, introduced the concept of hypergeoimages. The properties of geoimages, their spatio-temporal ranges, types of generalization, mutual compatibility are considered. The general theory of geoiconometry is outlined - a section of geoiconics that deals with measurements in two-, three- and four-dimensional geoimaging [1]. A.M.Berlyant studied the problem of the formation of cartographic literacy of students. Noting the importance of cartographic literacy, he notes its lack. “Today, cartographic literacy has ceased to be the prerogative of a scientist, it is becoming necessary for every person in everyday life: a diplomat, tourist, administrator and engineer, astronaut and driver of a private car, and finally, modern man needs cartographic literacy no less than computer literacy. The lack of cartographic literacy is one that has a detrimental effect on our economy and planning, on our attitude to nature and national relations, on international politics and cooperation. Therefore, the development of cartographic literacy should be mandatory at all levels of education” [2].

A.M. Berlyant considers one of the ways to improve cartographic literacy: “The interest of students in computer images provides teachers with a unique opportunity to open to students a unique world of maps, images, three-dimensional models, animations, to form a special, “ cartographic worldview, expand their horizons in the field of earth sciences and improve cartographic literacy. All this allows us to talk about Internet mapping as a special branch of modern automated cartography. Their development requires a sufficiently high culture of users, combined with a good knowledge of the possibilities of electronic networks. And this once again confirms the relevance of raising

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the level of modern cartographic education. Mastering cartographic and computer literacy should begin at school."

In the process of studying geography in educational institutions, cartographic literacy is formed, which is a component of mass geographical culture. This concept should combine students' theoretical knowledge about the specific properties of the main types of geoimages, the ability to extract geographic information from them, as well as knowledge of the location, relative size, shape of the most important objects on the earth's surface and the ability to create various cartographic works. He reveals the components of cartographic literacy: the most important skill that a cartographically literate person should have, of course, is the ability to read cartographic works, for example, recognize geographical reality from cartographic sources, identify connections and dependencies between the phenomena displayed on maps. This skill should be accompanied by methods of map analysis formed in the process of studying cartographic disciplines: techniques for compiling descriptions from cartographic sources - element-by-element and complex (as a result of which geographical characteristics of territories are compiled, as well as cartometric techniques. An important element of cartographic literacy is also the ability to compose various cartographic works. It is obvious that the process of forming cartographic literacy should correspond to the following - the generally accepted method of "working with a map" should "respond" to the compilation of maps - a mandatory paired "reciprocal" method of "reading" maps in the form of "writing" maps. In general, cartographic literacy involves the ability not only receive information, but also present it in a graphical visualized form [6].

In work [5, 8] carries out a transition to the idea of cartographic competence in the training of future specialists in the field of cartography. It is concluded that the student, mastering the system of professional and methodological training, passes through various levels of pre-professional competence. The following features correspond to the idea of competence: the study of cartographic materials - primary sources, the ability to work with them; knowledge of the main factors, general and particular concepts, patterns, scientific theories; mastering the graphic language of concept visualization; ability and readiness to apply the above knowledge and skills for the implementation of professional activities. There are apparently three levels of cartographic competence:

- at the first level, the future cartographer knows the map well, knows how to work with figurative and graphic information (he knows how to receive it, present it in a cartographic form,

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process it accordingly), acquires individual skills of self-education;

- at the second level of methodological cartographic competence, the level of education of the student is sufficient for understanding and, if necessary, solving worldview problems, research and creative tasks, for professional activities at the search level;

- the third level can be called the level of professional cartographic competence. This is the final stage of the final certification of the student, which indicates that he owns the methods of research, the use of the cartographic method in his knowledge, has personal experience in the phased development of the knowledge system, and, most importantly, knows how to reproduce cartographic literacy, knows how to use it in his professional activities [4, 7].

M.V. Litvinenko in his works widely and fully considers the training of a specialist in topographic and geodetic profile, in particular, a cartographic engineer [4]. She understands the professional competence of a specialist in topographic and geodetic profile as an integral characteristic that determines the ability of a specialist to solve professional problems and typical professional tasks that arise in real situations of professional activity, using knowledge, professional and life experience, values and inclinations. Such professional fields are geodesy, cartography, photogrammetry and remote sensing, geoecology and environmental monitoring, information systems, optical and optoelectronic systems, land management and land cadastre. In her opinion, it is obvious that specialists, for example, in the approach of “Cartography” should have competence in the field of cartography at a specialized level, in related areas: geodesy, photogrammetry, geoecology - at a general professional level. At the stage of identifying general professional competencies, it points to the need to specify their essence in certain subject areas. For example, when training specialists in topographic and geodetic profile, the range of technological competencies will have a common part for specialists in the field of geodesy and a specialist in the field of photogrammetry and remote sensing. And specific, due to different subject areas in which the activities of these specialists will take place. When preparing a specialist cartographer, it is necessary to specify technological competencies in the field of cartography, implying the possession of technological methods in cartographic production (from the field of topographic drawing), the use of specific technical devices that automate the work of a cartographer. Having considered the available research in the field of teaching cartography, we can draw the following conclusion. Despite the variety of approaches and the significance of the results obtained,

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the issues of revealing the essence and structure of the concept of “cartographic competence of university students”, as well as the issue of its formation on the basis of a technological approach, have not been sufficiently enlightened so far. For this category of students, the disciplines related to the cartographic cycle are mainly general professional or subject training disciplines. Therefore, it is necessary to clarify and concretize the concept of cartographic competence of university students for the above areas of training. At the same time, it is necessary to take into account modern conditions: the introduction of new national educational standards, the need for training specialists based on a competency based approach at the active level. It should be noted that for the direction of training of specialists of surveyors-cartographers, the specifics of future professional activity has characteristic features. Graduates of the specialty geodesy and cartography should be able to use maps as sources of information for solving practical problems and research problems, as well as create various cartographic works. But the goals of preparing a graduate of each of the directions are different.

Significant in the professional training of future mapping engineer is a personal approach to learning. It is associated with the formation of personal and professional qualities of a student and provides for the creation of an active educational environment for the formation of a future specialist cartographers. The fundamental components of a student-centered approach to learning are: self-actualization , individualization, creativity. Personality oriented education is aimed at the development and self-development of a specialist, his formation, taking into account individual characteristics, which allows him to realize himself in cognition, in educational activities based on his own interests, capabilities and abilities, value orientations and subjective experience. Of paramount importance in the personality oriented professional training of a cartographer is given to the formation of personal qualities that require the creation of conditions for professional growth, the formation of creative activity, initiative, self-education skills, self-development and adaptation in new social conditions.

Important components of the cartographic competence of future cartographer consider value orientations and motivation for their professional training. Value orientations are stable formations in the personality structure of the future teacher, characterizing his attitude to the interests of society, profession, self-actualization , etc. [3] Timely formed, clearly conscious value orientations make the behavior of a specialist purposeful and organized. Therefore, it is necessary to find out the life and professional values of the

future cartographer, since they perform the function of incentives and ensure the implementation of his activity at the normative and personal levels, contribute to the development of the need for constant self-improvement and self-realization. Successful formation of cartographic competence in future cartographers is possible if the motivational aspect of education at the university is strengthened, its social orientation through the widespread use of modern technologies and teaching aids, the use of the latest textbooks and manuals, didactic tools and computer programs.

In the process of professional training of future cartographers, the content of fundamental and special disciplines cannot be assimilated at the level of knowledge, skills and abilities. It is necessary to form a personal attitude, need, awareness of the importance of their study. Assimilation of professional material should take place at the level of experience, moral attitude to the situation, reveal the meaning of the obtained cartographic knowledge in life and professional activity. We consider the relevant qualities of a competent cartographer to be::

– special: objective (scientific training) and subjective (pedagogical skills, interest, creativity, etc.);

– personal: citizenship, moral purity, love for engineering , tact, creativity. Thus, the formation of value orientations, motivation for learning activities is important for improving the content and forms of professional training of future cartographers, for understanding the mechanisms of their self-determination and self-realization, for explaining the mechanism for the formation of cartographic competence.

An analysis of literary sources, the experience of professional activity at a university gives reason to assert that one of the conditions for achieving a high level of formation of the cartographic competence of future cartographic engineers is their involvement in independent work in compliance with a clear sequence of actions; providing conditions for the formation of knowledge, skills and abilities in fundamental and special disciplines.

The formation of cartographic competence of future cartographers is implemented in the process of solving the following tasks:

–development of cartographic thinking, value orientations, adequate self-esteem (personal component);

–providing professional knowledge (integrated) in fundamental and special cartographic disciplines (cognitive component) .

The specified principles of the organization of higher education optimize the process of formation of the cartographic

competence of future cartographic engineers, the development of their cartographic literacy and culture. The implementation of a personal approach in the training of future cartographers is possible in the case of building an educational process as a process of self-assertion of the individual, aimed at equal partnerships in the scientific and educational activities of the teacher and student.

The personality oriented approach of the educational process is the main one in substantiating the methodological principles for the formation of cartographic competence of future cartographers.

CONCLUSION

Thus, the cartographic competence of a student in the field of geodesy and cartography is the ability and willingness to mobilize a set of knowledge, skills and abilities in the field of cartographic disciplines for the following professional activities: creation of cartographic works of various types and degrees of complexity; their analysis and applied uses; compiling descriptions and performing various measurements on cartographic sources; topographic surveys of the area. Cartographic competence is realized through the creation of appropriate motivation (readiness), through the criterion of knowledge, through cartographic skills (activity).

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