FEATURES OF THE METHODOLOGICAL SYSTEM FOR TEACHING TRIGONOMETRY ON THE BASIS OF A GENETIC APPROACH

Ermatov Sherzodbek Latibjonovich
Andijan State University lecturer.
https://doi.org/10.5281/zenodo.8195366

Annotation: this article describes the content of the methodological system for teaching trigonometry on the basis of a genetic approach in specialized schools. In accordance with the concept of the genetic approach, a holistic scheme of the methodological development of the system for studying trigonometry-related educational material (course Department, system of important concepts or concepts) has been developed. It is explained that the scheme consists of the sequence, tools and methodological techniques of the educational process, stages of analysis of the educational material. The article summarizes the structure of the targeted, meaningful and process components of the methodological system regarding the training of trigonometry on the basis of a genetic approach.

Keywords: methodological system, genetic approach, analysis of the genetic development of educational material, analysis of the possibility of providing educational material and using various means of influencing students.

Introduction: The content and methodological direction of trigonometry in specialized schools, improvement of logical and didactic properties, systematization of theoretical rules serve to implement a specialized educational concept. The organization of the training of trigonometry, especially on the basis of a genetic approach, to some extent facilitates the assimilation of this course and helps to remember abstract concepts [1].

Literature review:

Prospects for the organization of mathematics classes for students of specialized classes [2] (V.I.Danilchuk, I.S.Yakimanskaya, L.S.Vigosky, A.N.Leontiev, N.F.Talizina), creating conditions for the organization of teaching on the basis of various approaches, taking into account the interests, inclinations and abilities of students [3] (yu.N. Makarchev, A.V. Dorofeev, A.N. Kolmogorov, A.G. Mordković, S.M. Nikolsky et al.) bringing their main ideas into practice is a leader in the development of methodological foundations for teaching trigonometry on the basis of a genetic approach.

Research Methodology: The development of a methodological system for teaching trigonometry in specialized schools on the basis of a genetic approach requires the implementation of the following tasks.

- specialized education shariotidatrigonometry to determine the methodological features of teaching;
- design of topics of the section "Trigonomeria" based on the principles of the genetic approach to specialized mactbs;
- development of targeted, meaningful, process and diagnostic components of the methodological system of training trigonometry on the basis of a genetic approach;

- to determine the practicality and effectiveness of the methodological system of teaching trigonometry in the framework of genetic yodashuv, taking into account the principles of interactivity, integrity, continuity and continuity, science [4].

In accordance with the concept of the genetic approach, we propose to develop a methodological development of the system of learning trigonometry-related educational material (course Department, system of important concepts or concepts), that is, the sequence, tools and methodological techniques of the educational process, stages of analysis of the educational material.

The analysis of educational material can be carried out in the following two stages [5]:

1) analysis of the genetic development of educational material;

2) to provide educational material and analyze the possibilities of using various means of influencing students.

The genetic development of educational material, in turn, implies the analysis of the studied material from four points of view:

a) historical;

b) logical-gnoseological (structural);

C) psychological;

D) applied.

Historical analysis often raises difficulties with the scarcity of historical material relating to the origin of the concept and the scarcity of literature on the subject. Therefore, it is advisable to conduct a number of studies devoted to both the history of the relevant areas of modern mathematics and the history of their inclusion in higher education programs and educational literature, their teaching-history. Monographs and other scientific works on the history of mathematics, educational publications, reference books and encyclopedias, primary sources – works of famous mathematicians, classical textbooks, popular science literature, journal articles serve as resources that teachers can use more. The purpose of historical analysis is to identify educational paths, the origin of scientific knowledge based on the educational material under study, to determine what problems caused the need for this knowledge, what obstacles were to the formation of this knowledge are among them.

Logical-gnoseological analysis, on the other hand, focuses on revealing all the objects necessary to study the material, their operas and relationships, the logical gensology of relevant concepts, terms, definitions, axioms, rules, the system of logical conclusions. The structure, inductive and deductive possibilities of the relationship between the necessary considerations, concepts and statements of the theory, in particular, the axiomatic appearance of the material, are manifested.

Is psychological analysis able to work with the previously acquired knowledge, experience and level of thinking of students (the necessary concepts and abstractions at the appropriate level?), involves identifying possible difficulties associated with students ' views on mathematical activity. It takes into account the levels of tolerance of students in mathematical calculations. Psychological analysis is also aimed at determining the structure of students ' activities in mastering the concept, idea, algorithm, planning their actions and operas, as well as showing the changes in objects necessary for learning. The main goal is to define ways to develop learning motivation and cognitive activity.

The Applied Analysis consists in establishing a connection between the studied material and the elements of natural sciences, technology, problems of the national economy, culture, history, social life, providing methods of applying mathematics both inside and outside mathematics.

In the second stage, in the analysis of the possibility of providing educational material and using various means of influencing students, in accordance with the principle of concentric education (the subject of learning is divided into parts –the studied concepts repeat, deepen the previous ones to a certain extent), previously studied concepts and ideas are repeated at this stage, deepened, included in New At this stage, a preview of important concepts and ideas that are fully studied requires the principle of concentric education, as well as the use of effective, visual and verbal-symbolic methods of transmitting information, as well as other means of influencing students (presentation style, elements of surprise, etc.), to illuminate the possibilities of multiple representations of the studied material.

After two stages of analysis, it is necessary to design the process of studying the educational material. The learning process can be divided into four stages:

1) formation of a problematic situation.

With a genetic approach to education, we are looking for the most natural ways of genesis of thought and cognition processes. That is, according to its problematic approach to the learning process, "the initial moment of the thinking process is usually a problematic situation ... The problem situation determines the participation of the student in the thought process, it is significant in that he is always focused on solving some kind of problem. Therefore, the task of the teacher is to build a problematic situation. The need to create a problem situation J. Representatives of Piagee followers, in particular, constructivists (the creator of"broken balance") and "French didactics" ("didactic engineering"), the identification of "gnoseological barriers" in the creation of didactic situations were described in the studies of the likes of Makhmutov, Kolyagin, Oganesian. All these developments can be used in the construction of problem situations in the educational process.

2) a statement of new questions of natural origin.

According to the theory of a problematic approach to education, "the emergence of questions is the beginning of thinking and the first sign of the concept that arises... Each solved problem presents a series of new problems; the more a person knows, the better he knows what he does not know". Accordingly, when solving an initial problem situation, it is important to constantly consider new, naturally occurring questions. Thus, the second stage in the design of the process of learning the material is the laying of new questions (by the teacher, or students) that arise naturally and require an answer. In fact, both stages - the construction of a problem situation and the formation of new, naturally occurring questions - pursue one goal, leading students to independently build a concept. Therefore, the construction of a problem situation, as well as the formulation and management of the discussion of new, naturally occurring questions, should be organized in such a way that students discover a new concept independently or with minimal help from the teacher. This can be compared with the moment of distinguishing the "initial general relationship" in the teaching material, which in the theory of educational activity is V. V. Leads to a theoretical generalization scheme developed by Davydov. A. A. In the school model of educational activity developed by Stolyar, we recall that the first two stages in the projected process of studying the material we propose coincide with the stage of approximately empirical (uncertain) mathematical processing.

3) conceptual-structural analysis and logical organization. After the problem situation was considered here, ways to solve it, various aspects were discussed, and the correct motivation was carried out through naturally occurring questions, elements of the theory. will be built-clear definitions, statements (axioms and theorems), conclusions. Deductive reasoning plays an important role at this stage. According to our concept, this stage can be greatly expanded in time and can even be divided into several stages, separated by time, according to the principle of concentrated learning. This stage is usually a. A. It corresponds to the second aspect ("logical organization of mathematical material") of the model of mathematical activity of schoolchildren, developed by Stolyar.

4) development of applications and algorithms. After the logical organization of the mathematical apparatus on the topic under study, as noted above, it is possible to consider various interesting and useful applications and applications. Here, in accordance with the principle of concentrated learning and the psychological principles of "enrichment" and "transformation", it is necessary to consider a sufficient number of exercises for changing the properties of concepts, introducing concepts into new connections and contexts. At all stages of studying a section or topic, it is necessary to ensure that students are trained in cognitive strategies. To do this, they have:

- the development of different thinking, for which they promote different ideas and hypotheses, rational and beautiful solutions (for example, the organization of "mental attacks"), encourage students to ask questions, formulate problems themselves, reshape, sometimes offer" open problems";

-to abandon automatism and the habit of acting on ready-made schemes, to offer unexpected solutions and answers, non-standard questions with paradoxes, assignments for this;

- educate the ability to argue, justify their own answers and decisions ;

- stimulate the use of intuition and assumptions, for example, D. Using the recommendations of the herd, applying heuristic strategies to students in solving problems. It is very important to help students develop speech to express their thoughts and ideas.

It is also necessary to give students assignments for the development of mental operas (analysis, synthesis, generalization, comparison, analogy, abstraction, concretization). For example, it will be useful to use theoretical assignments as exercises to draw conclusions. Such exercises help to develop the ability to think synthetically (Gusev). Finally, it is very important to encourage meditation in students, that is, the ability to learn the basics of their activities, their reasoning and conclusions, to consciously perform mental operas.

Conclusion/Recommendations:

The methodological system for teaching trigonometry for students of specialized schools should consist of components consisting of holistic elements [6]. The target component of this methodological system is aimed at solving educational situations at each stage of mastering educational materials by students, solving problems in each course process. The content component of the methodological system should consist of a set of educational content, assignments, examples and issues formulated on the basis of a genetic approach aimed at developing the knowledge, skills and skills of students. The process component covers the use of heuristic, problematic, project teaching methods, the organization and systematization of the information provided, forms of presentation of educational materials, etc. The specificity of this methodological system is determined by the multi-stepness of its content component. Procedural komponenet varies taking into account the requirements for specialized education

References:

1. Ermatov, S. L. (2023). TRIGONOMETRIC IDENTITIES OF THE QUADRILATERAL. Академические исследования в современной науке, 2(10), 72-73.
2. Askarali, M., Khursanalievich, K. U., & Ugli, A. O. U. (2023). ESTIMATES OF THE CONCENTRATION FUNCTION FOR STATISTICS. American Journal of Applied Science and Technology, 3(02), 18-25.
3. Khankulov, U. K. (2017). Description of Methodical System of Teaching Elements of Stochastics Line Mathematics Using Computer Technologies. Eastern European Scientific Journal, (6).
4. Хонкулов, У. Х. (2018). ON THE SELECTION PRINCIPLES OF EDUCATIONAL CONTENT OF STOCHASTIC ELEMENTS OF MATHEMATICS. Наука и мир, 2(4), 56-57.
5. Хонкулов, У. Х. (2015). О применениях компьютерных технологий в обучении элементов стохастики. Региональные проблемы преобразования экономики, (8 (58)), 76-82.
6. Zharov, V. K. (2012). Formanov Sh. K., Honkulov Yu. Kh. On the statistical method in a pedagogical experiment in the context of a modern educational process. Bulletin of the Moscow State Regional University. Series Pedagogy, (3), 104-110.