DIDACTICAL PRINCIPLES OF INITIAL TEACHING IN MATHEMATICS

Salima Kuziboyevna Kholmatova
Teacher, Chirchik State Pedagogical Institute, Uzbekistan

ABSTRACT

The article discusses the didactic principles of primary education in mathematics, since the modern concept of primary education for schoolchildren is focused on acquiring new knowledge in combination with the all-round development of the child's personal sphere. In practice, you can find a large variety of methodological techniques. Some of them are common to many subjects, others are applicable only when teaching this subject. The teacher chooses such methods and techniques of work that could provide children with the necessary knowledge, awaken their mental activity, develop and maintain their interest in learning. Since in mathematics lessons the teacher has great opportunities for instilling in pupil's honesty, hard work, the desire to overcome difficulties, etc. The most important means of educating these qualities are arithmetic problems, the text of which performs an educational function. The upbringing nature of teaching also largely depends on teaching methods.

Keywords: mathematical methods, pre-mathematical concepts, Didactic principles, the principle of upbringing education.

INTRODUCTION

All learning models have a common goal - the development of the pupil's personality, the formation of his desire and ability to learn: "The mission of the new education system is clearly correlated with the most important social effects of the education system - this is to ensure the social and spiritual consolidation of the nation, the competitiveness and security of the individual, society and the state. ".

Mathematical methods are actively used in economics, informatics, marketing, etc. Therefore, it is necessary to solve the most important methodological problem of bringing the subject of "Mathematics" closer to the methods used in practice. In mathematics lessons, it is necessary to ensure the actual relationship of the content of mathematics with the outside world in a language accessible to pupils, to recommend the use of certain topics in systems sciences, in professional activity. It is important to develop strong and meaningful math skills in pupils - both for further study of mathematics and for solving applied problems. To intensify their activity, it is necessary to show the connection between the subject and their future specialty. To

do this, you can use the following techniques:

- inclusion of materials from another subject in the lesson;
- the use of visual aids;
- posing questions using the content of related subjects.

METHODOLOGY AND LITERATURY REVIEW

The teaching method should be distinguished from the medium. The method is closely related to activity and does not exist outside of activity. Textbooks, books, reference books, manuals, technical means, dictionaries, visual aids are used as teaching aids. They can be used for a variety of purposes. Being included in any activity, they make it possible to fulfill the purpose of the activity. The use of various means in the learning process changes the very method of activity. The use of a variety of means leads to a change in the structure of the teaching method. So, the inclusion of film fragments in the teacher's story changes the nature of the activities of the teacher and pupils. Separate details of the method, its constituent elements are called methodological techniques. If with the help of the method the mastering of the main content of the educational material occurs, certain methodological techniques provide in-depth assimilation of individual questions of the subject or topic. In practice, you can find a large number of various methodological techniques. Some of them are common to many subjects, others are applicable only when teaching this subject. The teacher chooses such methods and techniques of work that could provide children with the necessary knowledge, awaken their mental activity, develop and maintain their interest in learning.

In the structure of teaching methods, the objective and subjective parts are distinguished first of all. The objective part of the method is due to those constant, unshakable provisions that are necessarily present in any method, regardless of its use by various teachers. It reflects didactic provisions common to all, requirements of laws and regularities, principles and rules, as well as constant components of goals, content, and forms of educational activity. The subjective part of the method is due to the personality of the teacher, the characteristics of the pupils, and specific conditions. The question of the relationship between the objective and the subjective in the method is very difficult and not yet fully resolved. The range of opinions on this issue is very wide: from the recognition of the method as a purely objective education to the complete rejection of objective principles and the recognition of the method as a personal, and therefore unique, work of a teacher. Truth, as always, is between extremes. It is the presence in the method of a constant, common for all objective part that makes it possible to develop a theory of methods, recommend to

practice the paths that are the best in most cases, and also successfully solve problems of logical choice, optimization of methods. It is also true that in the field of methods, their own creativity, individual skill of teachers is most manifested, and therefore teaching methods have always been and will always remain a sphere of high pedagogical art.

Pre-mathematical concepts are not divided, as in a strictly constructed mathematical theory, into initial and definable ones. At the pre-mathematical level, the prototype of concepts is directly real objects, situations. The essential difference between pre-mathematics and mathematics is that only one-stage abstraction is used in it, while in mathematics it is multi-stage.

Didactic principles are the starting points of the learning theory, expressing the basic laws of the learning process. They are determined by the goals of education and upbringing, the needs of social development, the characteristics of the educational activities of pupils of different ages.

Didactic principles (principles of teaching) are interrelated and form a system. In the pedagogical literature, there are various variants of the system of didactic principles, differing in the consolidation or unification of individual principles, or, conversely, in their detailing, dividing one principle into several.

The well-known mathematician-teacher D. Polya formulates the principle of active learning: the best way to learn something is to discover it yourself. Although a third-grade pupil "discovers" what has long been discovered, he thinks at the same time as a discoverer. An important goal of teaching methodology is to stimulate pupil discovery.

Visual teaching, according to KD Ushinsky, is such teaching, which is based not on abstract ideas and words, but on specific images directly perceived by the child. Visibility is very important in the initial teaching of mathematics in connection with the peculiarity of the concrete-figurative thinking of younger pupils. In middle and high school, symbolic activity is widely used (drawings, graphs, graphs, diagrams, tables, etc.). In the initial teaching of mathematics, all types of visualization are used: natural, symbolic, and especially pictorial. For example, starting to study the numbers and numbers 5, they show various pictures, each of which depicts a set of any objects, and what is common to all of these sets is only that each consists of five elements (pencils, birds, fish, boys, cars, etc.). The widespread use of pictorial visibility is due to the fact that at the initial stage of teaching mathematics, mathematical concepts are abstracted from their real prototypes. Symbolic clarity is also used, at first in combination with pictorial. So, for example, wanting to show that there are as many girls in one picture as there are balls in the

other picture, draw arrows from each girl to one of the balls so that no two arrows end at one ball. Of course, these arrows can be interpreted as indicating a girl's choice of a ball. When forming ideas about relationships "less", "more", cases are considered when all the girls do not have enough balls ("Helen is crying, she did not get the ball") and when there are extra balls left. There is only one step from this pictorial and symbolic clarity to purely symbolic clarity. You can designate both girls and the ball with some figures, for example, triangles, circles or just dots.

RESULTS AND DISCUSSION

Let us consider a system based on seven principles: upbringing teaching, scientific approach, conscientiousness of assimilation, pupil activity, clarity of teaching, strength of knowledge, individual approach. These principles are studied in detail in the course of pedagogy, therefore, we will limit ourselves only to a brief examination of the essence of each of the principles, paying main attention to the features of their implementation in primary teaching of mathematics.

The principle of upbringing education

Any training must be upbringing, that is, along with certain training functions, upbringing functions must also be carried out. From this, however, it does not follow that all education is reduced to teaching. On the contrary, it would seem to be more correct to consider that instruction is an integral part of the upbringing system.

Education in the learning process in general, and mathematics in particular, has as its main goal the formation of a schoolchild's worldview and morality. How is this problem solved in the initial teaching of mathematics? At this stage of training, it is necessary first of all to show that all the studied concepts and facts correspond to real objects, properties and relations between them. It is in elementary education that the famous statement of F. Engels that natural numbers and geometric figures are taken from the real world, and did not arise from pure thinking, are illustrated with numerous examples. We repeatedly refer to the real prototypes of quantitative relations and spatial forms. that is, we begin, in essence, the formation of correct ideas about the subject of mathematics, that mathematics, like other sciences, studies the real world around us.

In mathematics lessons, the teacher has great opportunities to educate pupils to be honest, industrious, striving to overcome difficulties, etc. The most important means of educating these qualities are arithmetic problems, the text of which performs an educational function. The upbringing nature of teaching also largely depends on teaching methods.

Scientifics's in teaching

In accordance with this principle, educational material should be presented in a sequence that preserves connections between concepts, topics, sections within a single subject, as well as interdisciplinary connections. Thus, the principle of scientific character in teaching includes systematicity and consistency (sometimes in pedagogical literature this principle is called the principle of scientific character, systematicity and consistency in teaching).

Scientifics's in teaching mathematics does not mean that the system of mathematical knowledge is included in the curriculum in the form in which it exists in the science of mathematics. With regard to the initial teaching of mathematics, the principle of scientific character should be understood as a reflection of certain mathematical ideas in it, allowing them to carry out their early propaedeutics. Such fundamental mathematical ideas are the ideas of number, functional dependence, geometric figure, measurement of quantities, algorithm.

The properties of the natural series - "for each number there is a single neighbor on the right", "for each number except 1, there is a single neighbor on the left", "the neighbor on the right is obtained by adding 1", "the neighbor on the left is obtained by subtracting 1" - reflect the ideas of the ordinal theory of the natural series and the value of the addition function 1 to form this series.

In primary school, it is important to form an idea of the closedness of the set of natural numbers with respect to individual operations: for any two natural numbers, you can find their sum, their product, but not for any two natural numbers, you can find a natural number equal to their difference or their quotient.

Familiarization of pupils with the procedure for measuring segments serves as preparation for their further assimilation of more general questions of the theory of measuring quantities.

Pupil activity

Consciousness of assimilation assumes the activity of pupils in the learning process. Without active mental activity, conscious assimilation of knowledge cannot be achieved. Distinguish between activity in the broad and narrow sense. Activity in a broad sense in teaching mathematics does not significantly differ from the activity of pupils in the process of teaching them other subjects, that is, it does not affect the specifics of the academic subject. Activity in the narrow sense can be understood as a manifestation of a specific mental activity characteristic of a scientist - a mathematician and therefore called "mathematical" activity.

At first glance, the very statement of the problem of teaching mathematical activity may seem inappropriate. Indeed, is a pupil of elementary grades of school capable of mathematical activity? Obviously, neither a pupil of the 3rd grade, nor a

pupil of the 10th grade is capable of mathematical activity at a high logical level. But a first grader is also capable of some kind of mathematical activity, adequate to the level of thinking. It all depends on what we mean by "mathematical activity".

When a first grader (or preschooler) forms pairs of elements from two sets and comes to the conclusion that one set has more objects than the other, he is already performing some, albeit very primitive, mathematical activity. Assimilating the concept of an arithmetic operation, the pupil moves from operations on sets of specific objects to operations on the corresponding numbers. (by the numbers of elements of these sets), while abstracting from the nature of objects. This is also a mathematical activity, but at a higher level. By discovering the laws of action over numbers, distracting from specific numbers, replacing them with letters (or empty windows of various shapes), he carries out mathematical activity at an even higher level.

Teaching mathematics can and should be structured so that, starting from the first grade, the pupil sequentially moves from one level of mathematical activity to another, higher one.

Any means of symbolic visualization is a conventional symbolic system with the help of which the studied properties of objects, phenomena, processes are separated from other properties. Thus, symbolic visualization is essentially a kind of language. So, for example, in order for the arrows mentioned above to become understandable, it is necessary to explain what they mean. The same can be said about the records 5 + 3 = 8, 5x3 = 15, etc. Each of them becomes clear only after it is illustrated with the help of some real situation that it describes, that is, after how its semantics are explained (the meaning expressed by this entry).

Often a symbolic notation, for example, 5x3 = 15, can be illustrated using a geometric model, for example, a rectangle drawn on paper, the length of which is 5 and the width is 3 cells. In this case, it is easy to determine the product - the number of cells contained in the depicted rectangle; it is easy to "prove" the commutativity (relatability) property of multiplication by counting the number of cells in rows and columns (the word "prove" is in quotes, since this is a pre-mathematical proof in a particular case, model).

An important role is played by clarity in the formation of mathematical concepts. Usually, two stages of this process are distinguished: sensory, consisting in the formation of sensations, perception and representation, and logical, which consists in the transition from representation to concept using generalization and abstraction.

Strength of knowledge

The preservation of systematized knowledge, skills and abilities among pupils for a long time is possible only with conscious assimilation of knowledge. Consciousness of assimilation is provided by active mental activity, therefore, a necessary condition for the strength of knowledge is its acquisition in an active way. However, along with consciousness and activity, an appropriate organization of training is also necessary, taking into account the peculiarities of the memorization mechanism. There are the following general didactic provisions: a) memorization is in direct proportion to repetition; b) memory has a selective character - we remember mainly what is important and interesting for us; c) the material is remembered better when the possibilities of using it in practice are revealed; d) memorization is facilitated by the division of the studied material into small portions according to the semantic content with the allocation of reference points in the form of headings, questions, mathematical relationships; e) emotionally colored material is remembered better.

The question of what a pupil should remember from the material being studied is much more difficult than it might seem at first glance. It is quite obvious that it is impossible and unnecessary to remember everything, if we mean the entire school course of mathematics. In the course of elementary school mathematics, almost everything must be memorized: tables of addition and multiplication of single-digit numbers, algorithms for performing four arithmetic operations on multi-digit numbers, etc.

Repetition of previously studied material before studying a new topic is one of the most important types of repetition in teaching mathematics in general and in primary grades in particular. It promotes better memorization of both old and new material.

Individual approach to training

When teaching, it is necessary to take into account the peculiarities of the thinking of each pupil, the properties of his memory, individual analyzers (vision, hearing), etc. Even for pupils of the same age they are different, therefore, some pupils learn the same material faster, while others more slowly. All this determines the need for an individual approach to training.

If it were possible to somehow "measure" the rate of assimilation of mathematical material by different pupils, then the spread would be much greater than in other subjects. Orientation to the "average" pupil leads to negative consequences. Weak pupils who are below the "average" level become unsuccessful, and the strong begin to get bored in the classroom and lose interest in the subject. Therefore, in the classroom-lesson system, when 30-40 people are studying in a class

at the same time, it is necessary to implement the principle of an individual approach, use various techniques that take into account the peculiarities of the assimilation of the material by various pupils (differentiated tasks, advanced, leveling classes, additional individual lessons, circle classes, etc. etc.). One of the possible solutions to the problem of an individual approach is associated with the use of personal computers in teaching.

CONCLUSION

Thus, in the didactic literature, there are various definitions of the concept of "teaching method". We will proceed from a fairly widespread understanding of teaching methods as ordered ways of interconnected activities of a teacher and pupils, aimed at achieving the goals of learning as a means of education and upbringing. The description of each teaching method should disclose: 1) the teaching activity of the teacher; 2) the content of the pupil's educational (cognitive) activities; 3) the connection between them, that is, the way by which the teacher controls the cognitive activity of pupils.

In didactics, however, only general teaching methods are considered, that is, methods that do not take into account the specifics of individual subjects. The study of the possibilities of concrete implementation of general methods in primary teaching of mathematics through their modification, adaptation, taking into account the specifics of mathematics and the mental activity of primary school pupils is the subject of the methodology of primary teaching of mathematics. Special teaching methods are also used, reflecting the peculiarities of mathematical knowledge.

Special teaching methods, and above all the modeling method (building mathematical models), to the greatest extent affect the formation and development of the mathematical style of thinking.

REFERENCES

1. Abdulkhayevich, A. A. (2020). Challenges, Cluster and Professional Support of Today's Early Educators' through Literacy and Language that Creates a Sense about the Concept of Early Education. *International Journal of Word Art*, (2).
2. Abdullayev, A. A. (2020). System of information and communication technologies in the education. *Science and World*, *5*(81), 19-21.
3. Abdullayev, A. A. (2020). Cluster method in the development of critical thinking technology in the lessons in primary school. *Science and World*, *5*(81), 16-19.
4. Abdullayev, A. A. (2020). Development of professional skill of teachers in the higher education institutions. *TDPU ilmiy axborotlari*, *10*, 191-194.

5. Abdullayeva, M. (2020). Bo'lajak tarbiyachilarning qobiliyatini rivojlantiruvchi asosiy omil. *Zamonaviy fan va talim-tarbiya: muammo, yechim, natija*, *1*, 112-114.
6. Abdurashidovna, M. D. (2020). Idea of philosophy and sufisis in poetry (On the example of Z.Mamadalieva's work). *Internation Journal of Word Art*, (2).
7. Atabekov, F. O. (2020). Boshlang'ich sinf o'quvchilarida jismoniy hattiharakatlarni mustaqil egallash ko'nikmalarini shakllantirish. *Zamonaviy fan va talim-tarbiya: muammo, yechim, natija*, *1*, 229-231.
8. Gimazutdinov, R. G. (2020). Theoretical basis of physical education of children of preschool age. *Academic Research in Educational Sciences*, *1*(4).
9. Hamidovna, N. R. (2020). Preparation of children in schools by making technological techniques in pre-school education. *European Journal of Research and Reflection in Educational Sciences*, *8*(2), 120-124.
10. Juraboev, A. B. (2020). The formation of general cultural attitudes towards the environment among students as a factor in the development of a healthy lifestyle. *Academic Research in Educational Sciences*, *1*(4).
11. Mahmudova, D. B. (2020). Teaching applique for older preschool children. *Academic Research in Educational Sciences*, *1*(4).
12. Narimbaeva, L. K. (2020). The Development Of The Preschool Education System Is A Requirement Of The Times. *The American journal of social science and education innovations*, *2*(11), 108-111.
13. Nosirova, R. K. (2020). Methodology for teaching outdoor games in preschool institutions. *Academic Research in Educational Sciences*, *1*(4).
14. Sanakulov, X., & Sanakulova, A. (2020). Boshlang'ich texnologiya ta'limining muhim omillari. *Zamonaviy uzluksiz ta'lim sifatini oshirish: innovatsiya va istiqbollar*, (3), 66-68.
15. Sanakulova, A. (2020). Maktabgacha yoshdagi bolalarni intellektual ta'lim va tarbiyasida innovatsion yondashuv. *Zamonaviy uzluksiz ta'lim sifatini oshirish: innovatsiya va istiqbollar*, (3), 64-66.
16. Shukurovna, B. L. (2020). The importance of literary tales in national education. *International Journal of Word Art*, (2).
17. Soatov, E. M. (2020). Psychological properties development of volitional qualities in pupils. *Academic Research in Educational Sciences*, *1*(4).
18. Xatamjanovna, N. Z. (2020). Critical text of the codex cumanicus manuscript. *International Journal of Wort Art*, (2).
19. Xurramov, E. E. (2020). Ajdodlarimiz bolalarda ijtimoiy sog‘lom muhitni shakllantirish xususida. *Zamonaviy fan va talim-tarbiya: muammo, yechim, natija*, *1*, 236-238.

20. Yuldoshevna, S. Z. (2020). History of the prophets and judges - light of spirituality. *International Journal of Word Art*, (2).
21. Абдуллаев, А. А. (2020). Халқ ўйинларидан фойдаланиш ўқувчиларни баркамол қилиб тарбиялаш йўллари. *Муаллим ва узлуксиз таълим*, *1*(1), 10-13.
22. Атабеков, Ф. О. (2020). Теория и методика обучение воллейболистов игровой деятельности. *Научный вестник ТГПУ*, *10*, 194-198.
23. Болиева, Л. Ш. (2020). Мактабгача таълимда соғлом турмуш тарзини яратишда халқ ўйинлари. *Муаллим ва узлуксиз таълим*, *1*(1), 122-125.
24. Муталова, Д. А. (2020). Мактабгача таълимда интерактив методлар – сифат ва кластер самарадорлик омили. *Муаллим ва узлуксиз таълим*, *1*(1), 131-133.
25. Тешабаева, З. С. (2020). Олий таълим жараёнида бўлажак тарбиячиларни инновацион фаолиятга тайёрлаш. *Замонавий таълим*, *1*(86), 30-34.
26. Шанасирова, З. Ю. (2020). Мактабгача таълим мазмунини оширишда замонавий технологиялардан фойдаланишда кластер тизими. *Муаллим ва узлуксиз таълим*, *1*(1), 125-128.
27. Шонасирова, З. Ю. (2020). Психолого-педагогическая компетентность учителя начальных классов. *Научный вестник ТГПУ*, *10*, 198-201.