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IMPLEMENTING A COMPETENCY-BASED APPROACH IN MATHEMATICS CIRCLE CLASSES

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Abstract

One of the main goals of teaching mathematics is to prepare students for everyday life, as well as to develop their personality through mathematics. Mathematics makes it possible to ensure the formation of both subject and general educational (meta-subject) skills of schoolchildren. All key competencies can be implemented in mathematics lessons. Knowledge, skills and competencies in mathematics lessons must be formed through special assignments and tasks.

Keywords: Mathematics, competence, competence-based approach, key competencies.

Introduction

One of the main goals of teaching mathematics is to prepare students for everyday life, as well as to develop their personality through mathematics. The basis of the federal component of the state educational standard of basic (complete) general education in mathematics is a competency-based approach. Mathematics makes it possible to ensure the formation of both subject and general educational (meta-subject) skills of schoolchildren, which in the future will allow them to apply the acquired knowledge to solve their own life problems.

Khutorskoy A.V. notes that the introduction of the concept of "competence" in the practice of teaching will solve a typical problem for the Russian school, when students, having mastered a set of theoretical knowledge, experience significant

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difficulties in their implementation when solving specific problems or problem situations. Educational competence does not imply the assimilation of individual knowledge and skills by students, but their mastery of a complex procedure, in which for each selected area an appropriate set of educational components is determined [1].

The list of key competencies cited by A.V. Khutorsky, include: value-semantic, general cultural, educational and cognitive, informational, communicative, social and labor, personal.

All these competencies can be implemented in mathematics lessons.

For the implementation of value-semantic competence, it is suitable to hold subject Olympiads, competitions (for example, "Kangaroo"), which include non-standard tasks that require the student to use subject logic, and not the material of the school course.

It is possible to implement general cultural competence using tasks with a hidden information part. Tasks with an implicit informative part are not difficult to work with and this technique is quite applicable at school. It is important only when summing up the lesson to focus the attention of students not only on the mathematical components of the lesson, but also on general cultural ones.

The formation of educational and cognitive competence is facilitated by various practical methods for organizing the work of students.

Cognitive interest, like any personality trait and motive of a student's activity, develops and forms in activity, and, above all, in teaching [2].

And here game moments, game forms of training come to the rescue. Mathematical games are a technology that allows, like no other, to develop the key competencies of schoolchildren, preparing them for serious research activities and training in a specialized school. Games put the student in search conditions, stimulate interest in winning, and hence the desire to be fast, collected, dexterous, resourceful, to be able to clearly complete tasks, follow the rules. In games, especially collective ones, the moral qualities of the individual

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are also formed. At school, teachers often use such games as “Field of Miracles”, “Guess the Word”, “Math Fight”, “Bukvograd”, “Blitz Tournament” in extracurricular activities in mathematics.

One way to implement this competence is to conduct verification work in the form of a test. Mathematics teachers use the following types of tests:

- selective, where it is necessary to choose one correct answer from the proposed ones;
- merge test, in which it is required to establish a correspondence between the elements of two sets;
- test addition, in which it is necessary to continue the formulation of the theorem, properties;
- ranking, where you need to determine the correct sequence of actions.

The expediency of this work from the point of view of the competence-based approach lies in the fact that in the course of work, students acquire general educational skills and abilities. Moreover, it is the ability to solve tests that will be very useful for children in the future, since they will have to take final exams at school and tests when entering universities.

Educational and cognitive competence has a practical orientation in the creativity of students, in research activities. During extracurricular time, work is organized to create educational projects on the subject. The mastery of educational and cognitive competence is also facilitated by practical work in the classroom.

At the stages of planning, practical activities of students and control, it is possible to use group activities, which, if properly organized, will allow the formation of communicative competencies. Communicative competence is not new in the school education system, because its implementation implies the use of various collective (communicative) methods of work (such as discussion, group work, pair work, etc.) [2].

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In mathematics lessons, children can work in pairs when performing any task, for example, they tell each other a rule, check the proof of a theorem from each other, group problem solving, guessing crossword puzzles.

Information competence implies the use by the student of various information resources: reference literature, textbooks by other authors or other subject areas, newspaper articles, Internet resources, etc. Turning to examples from life gives me the opportunity to form informational competence in students, for example: 5th grade. Topic: "Diagrams". In the diagrams we reflect the work of our school: academic performance in the classroom and school; quantitative composition in various classes; the age of the students.

It is very useful to hold lessons-seminars and lessons-conferences, in preparation for which students prepare their reports on their own, they not only find the necessary information, but also transform it.

The most important type of educational activity, in the process of which schoolchildren assimilate mathematical theory, develop their creative abilities and independence of thinking, form and develop skills, abilities, competencies, is a task. Therefore, knowledge, skills and competencies in mathematics lessons must be formed through special tasks [3].

Of particular interest to children are tasks with practical content, which are real life situations. Examples of such tasks are tasks from part B of practice tests to prepare for final tests. Many mathematics teachers in schools use such tasks starting from the 5th grade. For example:

B1: A postage stamp costs 115 soums. What is the largest number of these stamps that can be bought for 822 soums?

Q1: A nautical mile is 1852 m. The ship's speed is 15 nautical miles per hour. What is the ship's speed in km/h?

Or such an example: A bank deposit is the amount of money transferred by a depositor to a bank in order to receive income in the form of interest. Interest on the amount of the deposit is accrued from the day following the day of its receipt

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by the bank until the day the deposit is closed. Usually, the depositor has the opportunity to choose a scheme for calculating interest: withdraw it after the expiration of interest payment periods, add it to the total amount of the deposit, which increases the amount of the deposit.

On March 1, 2019, Rustam opened a bank deposit for 1.1 million soums at 10% per annum for a period of three years. The bank pays the due interest on the 1st day of each following month, crediting it to the client's card account (not counting it as a deposit).

Will Rustam be able to buy a motorcycle for 270 thousand soums on December 15, 2021, provided that he can only spend interest on the deposit? Justify your answer [5].

Thanks to such tasks, students see that mathematics finds application in any field of activity, and this, in turn, increases interest in the subject.

The competence of personal self-improvement is aimed at mastering the ways of physical, spiritual and intellectual self-development, emotional self-regulation and self-support. The real object here is the student himself [4].

A person who is not able to assess his knowledge and skills in a particular area, as well as control his own activities, cannot be considered competent in this area. Therefore, the most important task when using the competence-based approach at school is teaching students self-control: the ability to notice and eliminate mistakes in a timely manner, anticipate possible difficulties in solving problems that have arisen, evaluate and summarize the positive aspects of their educational work. Tasks that form these skills include tasks such as "find a mistake"; "think of a mistake"; tasks with an approximate assessment of the desired results; tasks for checking the results obtained in various ways; games with strict rules: "domino", "lotto", "maze", "cipher word".

A rather productive form of work on the formation and development of self-control and self-esteem of students is diagnostic cards (cards for monitoring and evaluating knowledge and skills).

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Social and labor competence can be implemented in the following way. If you constantly work to improve the mental account in children, then they will not have problems such as how to calculate the amount of purchases in the store before they go to the checkout, which relates to the social and labor sphere.

The competence-based approach can and should be implemented in mathematics lessons. I believe that each teacher needs to develop their own strategy for the formation of key competencies. If there is a strategy, then it is easier to provide a practice that includes everything that is significant in the coming lessons: equipping tasks with vital material, including game and business situations, incentives, competitions, various forms of cooperation.

REFERENCES

1. Khutorskoy A.V. Key competencies as a component of a person-oriented paradigm // New education. 2017. -№ 6.
2. Ivanov D. A. Competencies and competence-based approach in modern education [Text] / D. A. Ivanov. - M.: Bulletin of Moscow State University, 2017.
3. Episheva O.B. Integration of Innovative Approaches to Teaching in Mathematical Education: Issues of Theory and Practice: Collective Monograph / Ed. O. B. Episheva. - Tobolsk: TSPI im. DI. Mendeleev, 2018.
4. Khutorskoy A.V. Key competencies and educational standards. <http://eidos.ru/journal/2002/0423.htm>.
5. Mathematics. Tests and assignments. Book 1 / D.A. Maltsev, A.A. Maltsev, L.I. Maltsev. - Rostov n/a: Research Institute of School Technologies, 2021.