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APPLICATION OF METHODS FOR DEVELOPING COGNITIVE COMPETENCES OF PRIMARY STUDENTS

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Abstract
This article analyzes the directions of development of cognitive competencies of primary school students. Cognitive competence is the process of formation of students' skills of information reception, processing, logical analysis, problem solving and independent thinking, which is one of the important factors in increasing the effectiveness of education. At the same time, pedagogical technologies such as problem-based learning, research methods, game methods, interactive methods, constructive approaches, visual methods and reflection were used, and their impact on the thinking process of students was studied. Also, cases of incorrect application of methods in mathematics lessons were analyzed, revealing how they can negatively affect the cognitive development of students. The results of the study can serve as a theoretical and practical basis for primary school teachers, pedagogues and educational methodologists.

Keywords: Cognitive competence, primary education, problem-based learning, reflection, metacognitive approach, interactive methods, game-based methods, mathematical literacy.

Introduction

As you know, in modern society, the level of development of countries is important not only by its technical condition, but also by the competence of the levels of knowledge, skills, qualifications of student youth who are participants in educational institutions. At this point, today it requires elementary school teachers that students regularly develop cognitive competencies. Like many concepts, today in the educational system, terms such as cognitive structure, cognitive system, competence are entering and dictate a deeper understanding of the term. It is understood that, when perception, persuasion, more openly expressed in the lexical meaning of the word cognitive, an individual is a system of knowledge developed in the mind as a result of character, upbringing, observation and reflection of the world around him. The Explanatory Dictionary of the Uzbek language, on the other hand, states that it conveys meanings such as knowing, understanding, understanding and thinking. Human abilities based on cognitive processes constitute cognitive competence and include skills such as environmental awareness, problem solving, logical thinking, analysis, memory, attention. It is for this reason that cognitive competence is important for elementary students, which is

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inextricably linked with increasing the mathematical and logical literacy of students. In general, by improving the quality of thinking, the transition from the “knowledge is power” educational model to the “education is research” model has begun, which involves the development of flexibility, reflexivity and the ability to work creatively. The idea of a competency-based approach implies the formation of competencies as a practically practice-oriented result of Education, which is reflected in the ability to successfully solve certain professional tasks. In a wide range, cognitive competence ensures the effectiveness of the development of professional and special competencies, which makes it possible to consider its development as a priority of modern education. Since the implementation of competencies occurs in the process of performing various types of activities for solving theoretical and practical problems, competencies include, in addition to active knowledge, abilities and skills, motivational and emotional-volitional areas. To summarize, by cognitive competence we understand an integral quality that ensures that the individual is ready for self-education, Independent Education, personal and professional growth. The mechanism of self-discipline involves the subject's choice and acceptance of the purpose of his activities, his personal attitude to the preparation of the program of action, self-control, self-assessment and analysis of his activities. In conclusion, it can be said that many authors who have described cognitive competence claim that it has an integrative structure that includes a complex of knowledge, cognitive skills and personality traits that ensure the effective course of the cognitive process.

Object of study and methods used

Cognitive competence J.A.Mardonqulov, A.A.Ibragimov, G'.A.Nafasov, J.S.Otepbergenov, K.Kudratov, A. V. Khutorsky, E. R. Antonenko, A.Gilev, E . V. Vyazova, N. I. Samoylova, O. V. It continues to be an object of study by researchers such as kharitonova. Describing it, many authors, as a rule, emphasize its integrative structure, which includes a complex of knowledge, cognitive skills and personal characteristics that ensure the effective course of the cognitive process. As we know, the subject of the methodology of teaching mathematics is a certain branch of pedagogical science, which is engaged in the study of the rules for teaching mathematics. The methodology of teaching mathematics in the process of studying the laws of teaching mathematics is inextricably linked with the disciplines of pedagogy, logic, psychology, mathematics, linguistics and philosophy. In other words, the problems of teaching mathematics at school are solved in close connection with the disciplines of logic, psychology, pedagogy, mathematics and philosophy. The methodological basis of the methodology of teaching mathematics is based on the theory of cognition. This is such a knowledge that literacy lies in its Zamir. Various educational methods and techniques can be used to develop cognitive competencies of elementary students. The following approaches are especially effective for developing based on mathematical literacy:

1.Problem education (problematical approach) is an approach to students through issues that have no specific solution. Through the process, students are independently sought, thought, and offer a variety of solutions. For example, giving assignments such as" calculate how much your family uses for a week “or” tell me how many products you eat for a month."

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2. Research or experimental techniques. Students usually acquire effective knowledge by forming a mindful system of divers through small experiments or projects. For example, measuring the length or weight of objects in a house to understand units of measurement, familiarizing yourself with the model of that shape in the process of understanding shapes is a better way for their understanding. (More effective if the teacher uses exactly the model, not the triangular necks, as he explains The Shape of the Triangle)

3. Playful methods: the focus is on strengthening mental activities through mathematical games. Each didactic game will have the same rules as any other game. If the rules of the game are not followed, the importance of the game in the quality of the game, consequently, the educational and psychological significance of the game, disappears. The rules of the game are included in the game assignment. A game assignment is a task that the teacher gives to children in the way of explaining how the game is played, who is considered the winner, etc. M.E. And, in Jumayev's opinion, play is an activity embedded in the minds of children, this activity of which, depending on the types of games, reflects objective reality, life to a certain extent. The game is a continuation and consolidation of the educational activities mentioned in the classroom to a certain extent. In the experiment, this is proven that the game is a necessary need for younger students. For example, "who solves an example faster?", "Mathematical maze "or"number puzzles". Let's look at this through a single" mathematical maze " method: "Math maze" is a playful method that helps students develop logical thinking, problem solving, and decision-making skills. This method is very effective in increasing students ' cognitive competencies and is especially used to promote mathematical literacy. The method's conduct is as follows: 1.Students are given a maze-shaped map.

2.In each direction, mathematical examples or logical questions are placed.

3.To ' the student who finds the answer will move on to the next step and must reach the end point. The student who answers incorrectly is forced to choose a different path. The method works as follows:

1. A labyrinth scheme is drawn-in this there will be different directions, and examples or issues will be placed in each direction.

2. Students choose a path-if they answer correctly, they can walk forward; if they answer incorrectly, they will have to go back or look for another path.

3. Finding the shortest path-the reader must choose the most correct and fast path to reach the final destination.

For example, "mathematical labyrinth" 36 ÷ 6 = at the starting point ? (answer: 6 → the next path will open) At the next point: 15 + 7 = ? (answer: 22 → straight path) In the case of an incorrect answer, it is directed in a different direction.

4. Interactive methods: thought attack (brainstorming) – creates the opportunity to think freely about solving problems. The cluster method is the grouping and linking of basic concepts on a topic. Role-playing games-for example, calculating with money through the game" mathematical store". The order of the game "mathematical shop" is as follows:

1. Starting from the preparatory stage: part of the classroom is decorated in the form of a store. Pictures of various products (chocolate, books, toys, fruits, etc.) or real things are made. Prices for products are

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recorded. (E.g. Rs 1000, Rs 2500, Rs 5000). Each student is given special "money" (cards or paper money) for the game.
2. Division into roles: sellers – sell and Bill products. Buyers-buy products and participate in billing. Roles alternate in front of each play.
3. Game process: the buyer chooses a product and calculates how much money to pay. The seller checks and accepts that he can count correctly. In the case of excess or insufficient money from the buyer, the calculation is made and the problems are solved. How much return will a buyer receive if he receives a product worth 3,500 with 10,000 rubles? How much to pay in total if 2 chocolates (from 2500 rubles) and 1 juice (from 4000 rubles) are taken? If there is a 20% discount in the store, how many rubles will the product cost 5000 rubles? problematic situations such as are created. Students will have to find an independent solution to this.
5. Constructive methods (STEM approach). Combine mathematics, natural sciences and technology to complete creative projects. For example, creating different models from geometric shapes.
6. Visual methods: pictorial study of concepts using diagrams, drawings, infographics. For example, comparing the set of numbers through the Venn diagram. 7. Reflection and metacognitive approach: teaching students to analyze their own thought processes. Questions: "How did you solve this issue?" , “What other way could it be solved? When we look at a single issue with the help of a single issue, there may be several solutions to the issue.
Example: 24 birds are walking in the garden yard. 8 of them are pigeons, the rest are sparrows. If each Sparrow eats 2 grains, how many grains did it eat in total? Solution method 1: correct subtraction and multiplication
1. We find the number of sparrows: (the number of sparrows)
2. Each Sparrow eats 2 grains:
Answer: 32 grains.
Method 2: drawing up an equation: we define the number of sparrows as x: x = 24-8 x = 16 for each Sparrow eating 2 grains: y = 16 *2 y = 32 Answer: 32 grains. Method 3: Step-By-Step addition: since each Sparrow eats 2 grains, we can add 16 sparrows in a row: 2 + 2 + 2 + 2 + ... + 2 (16 times) 2 *16 = 32 response: 32 grains.

The results obtained and their analysis

These approaches are widely used in mathematics classes as an important role for students. Of these, playful and interactive methods are the direction of most interest to students, while problematic and redlexing techniques have been found to be the most effective way for students to develop their independent thoughts. In this process, the method of visual and STEM techniques was found to be easier to understand, but not equally accessible to all students. We know that psychologists have proven that the 6-10-year-old period is the most important and responsible period in the formation of children's thinking skills and imagination. It is very difficult to later shed the foundation of knowledge, which was not formed at this time of childhood. Therefore, one of the main tasks of the methodology of primary education, in particular the methodology of primary education in mathematics, is to ensure an

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increase in the sufficiently high developmental efficiency of teaching, to accelerate the impact on the mental development of children. Elementary educational tasks in mathematics can be solved only on the basis of a system of theoretical knowledge. This knowledge includes a scientific worldview, psychology, didactics, mathematics, and a methodological teaching theory that encompasses their nature. However, the theoretical knowledge alone is not as sufficient as in preparing for any other activity. It is necessary to know the content of teaching and the use of the most effective methods for one or another educational option that affect the development of the mental activity of students, to know how to solve specific methodological tasks that arise in the course - ready-course or in the lesson itself. It is especially important for the teacher of primary classes to know and take into account the level and possibilities of students ' mental activities, due to the fact that in the same primary classes the mental development of children is based. In the lessons, special attention is paid to the development of children's interest in mathematics. The more interesting the lesson is organized, the more attentive the children will be, and actively participate and become independent.it is because of this that it is important to create the foundation of knowledge, with the initial class stage serving as a base. The methods of training in the development of mathematical abilities and their selected application to the lesson should be correct. Only then will it be closer for us to achieve our goal. After all, in turn, all methods have a scope, a place of application, which will be associated with the result in its application. It can be seen that the methods that develop students ' cognitive competencies on the basis of Mathematical Literacy have lost sufficient effectiveness of the methods, having encountered cases of misapplication today as follows:

1. Problem education (problematical approach)

Correct application: students are given an issue and find their own way to the solution.

Misapplication: the teacher immediately utters the answer, which results in students not thinking independently or being given a very complex problem which causes students to lose motivation. Example: Correct: "How do we find the age of the father if the age of his child is equal to a third of the age of his father?" Wrong: "here, write down the formula and use it like this."

2. An example of research and experimental methods:

Correct application: students independently look for answers.

Misapplication: readers are not given specific instructions, which result in them disappearing, or all answers are given ready, with readers only copying.

Example: True: "if we throw stones of two different masses from the same height, which one will fall to the ground faster?" Disambiguation Incorrectly: "I tell you: both fall at the same time." It is more important and effective that students see in research than they hear from the teacher, of course.

3. Playful methods ("mathematical maze")

Correct application: students are engaged in interesting tasks and are looking for answers themselves.

Misapplication: the game becomes complicated, so some students lose interest or the outcome of the game is ignored, simply transferred to spend time.

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Example: True: "check your answers to choose the right path in a mathematical maze!" Incorrectly: "walk in the Labyrinth, the end ends with the address."

4. **Interactive methods (thought attack, cluster method, role-playing games) Correct application:** students freely state their thoughts.
Misapplication: only activists participate, passive students are ignored, or the teacher denies others, knowing that only one thought is true.
Example: True: "by what methods can an issue be solved? Let everyone say their opinion!" Wrong: "this method is wrong, use the one that Guli said."

5. **Constructive methods (STEM approach Correct application: students solve real-life problems.**
Misapplication: projects are simply stuck in theory, practically not tested. The teacher believes that the STEM project is too difficult, and elementary students do not understand.
Example: Correct: "How to heat water using sunlight?"(It is recommended to make a Model) Incorrect: "remember the formula, but in real life it is not used or very rarely used"

6. **Visual techniques (diagrams, drawings, graphs) Correct application: readers easily perceive** concepts through diagrams and graphs.
Misapplication: graphs are not explained to readers, only drawing a drawing. Data is given that causes misinterpretation of diagrams. Example: true: "as can be seen from this diagram, students in the 3rd grade read more books than in the 2nd grade." Incorrect: "learn this graph. (Without explanation, students are asked for results.)"

7. **Reflection and metacognitive approach. Correct application: readers analyze their thoughts, understand how they made a mistake.**
Incorrect application: only the correct answer is emphasized, incorrect answers are not discussed. As a result, students will not have the opportunity to express their thoughts openly. Example: Right: "How did you make a mistake? What do you think, how to fix next time?" Wrong: "your answer is wrong, we ask another reader."

Conclusion

In conclusion, there are various methods and techniques that promote cognitive competencies of elementary students, and their misapplication leads to lower student motivation, limit critical thinking, and reduce the effectiveness of the learning process. Therefore, it is important to properly organize the methods, ensure the participation of students and direct them to the thinking process. Elementary education is the foundation of education, during which it is required to get the right approach even in terms of sufficient knowledge, skills.

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References:

1. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan"on approval of state educational standards of General secondary education"No. 187. April 6, 2017y
2. B.Boltayeva.” Formation of base competencies in elementary grades " 677-681 , 2024.
3. Zhumayev M.E., Z. G. Tadjieva. Methodology for teaching mathematics in elementary grades (tutorial for Oo) T. "Science and technology" 2020
4. Repyova I.V. Class 4 Part 1. Math. Textbook. - Tashkent.:. Novda Edutainment. 2023.
5. Repyova I.V. Class 3 . Math. Textbook. - Tashkent.: Publishing house "Novda Edutainment". 2023.-134 b
6. Gofurova, M. A. (2020). Development of students' cognitive activity in solving problems. ISJ Theoretical & Applied Science, 1(81), 677-681.
7. Gafurova, M. A. (2021). Developing Cognitive Activities of Primary School Students based on an Innovative Approach. International Journal of Multicultural and Multireligious Understanding, 8(10), 236-242.
8. Gafurova, M. (2021). Intellectual and Cognitive Activities of School Pupils. The American Journal of Social Science and Education Innovations, 3(2), 447-450. 9.Gofurova Mahfuza Abbosovna. The effects of applying research methods in elementary school mathematics lessons .Individual.scientific posts-Nauchny Vestnik. Fergu, 2023 / No. 2, 67-71
10. www. Ziyo.net
11. www.wikipediya.uz