The Bioscan
AN INTERNATIONAL QUARTERLY JOURNAL OF LIFE SCIENCES
20(4): 686-700, 2025 www.thebioscan.com

EXPERIMENTAL STUDY OF ELEMENTARY MATHEMATICAL CONCEPTS OF STUDENTS WITH INTELLECTUAL DISABILITIES

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DOI: 10.63001/tbs.2025.v20.i04.pp686-700

Keywords
Images of size, simple issues, quantitative representations, geometric shape, spatial and temporal representations, placement by size, example, counting, adaptation.

Received on:

19-09-2025

Accepted on:

20-10-2025

Published on:

25-11-2025

ABSTRACT

This article reveals the state of development of elementary mathematical skills in mentally retarded students. In mentally retarded students, their perception of size, their solution of simple issues, their quantitative perception, their understanding of geometric shape, the state of spatial and temporal representations were identified and analyzed. As a result of an experimental study, students were examined by mentally retarded children about their perception of size, solving simple issues, quantitative perceptions, concepts about geometric shape, the state of appropriation of spatial and temporal representations.

In our country, serious attention is paid to the issues of raising children with developmental disabilities in a national spirit, maturing mentally, spiritually, physically, finding their place in society, social life. One of the characteristic differences between children with developmental disabilities and their peers developing in meyori is the insufficient development of mental processes. The general description of children with lagging development indicates that its verbal capabilities are always low. Also, a complex relationship prevails between the levels of development of a child's speech and his intellect.

The attitude of nations to disabled persons in need of special protection is expressed in the spiritual and moral indicators of society. Special educational institutions are established to educate, educate and treat children with physical or mental developmental disabilities, as well as children and adolescents who need long-term treatment. Sending and removing children and adolescents to these educational institutions is carried out with the consent of parents or representatives of other legislative organizations according to the conclusion of the psychological and medical-pedagogical Commission. Mathematics teaching is not only about mastering certain knowledge and skills of mentally retarded learners, but also implies the general development of cognitive abilities in them, such as perception, memory, thinking, imagination. The work carried out in this direction allows them to train important methods of mental activity, perform mental operations

such as analysis, synthesis, comparison, generalization, concretization. Materials given in mathematics and working with them will greatly help to educate children about logical thinking, how to clearly and fluently state their thoughts in oral and written speech. The concreteness of the thinking of mentally retarded readers, the emptiness of the qualification of generalizing the observed phenomena leads to the fact that in them the concept of number and number arises very slowly. This does not develop sufficiently even when hattoki enters Grade 1. The successful acquisition of mathematics by mentally retarded students depends on their specific characteristics and the difficulties encountered in mastering mathematical concepts.he concreteness of the thinking of mentally retarded readers, the emptiness of the qualification of generalizing the observed phenomena leads to the fact that in them the concept of number and number arises very slowly. This does not develop sufficiently even when hattoki enters Grade 1. The successful acquisition of mathematics by mentally retarded students depends on their specific characteristics and the difficulties encountered in mastering mathematical concepts. Therefore, using various methods to develop the mathematical knowledge of mentally retarded students will yield good results. In particular, tasks such as providing education to the growing younger generation, increasing attention to children in need of special education, improving educational methods and methods were set.

The peculiarities of mathematical concepts in mentally retarded students L.n n particular, n particularn particulaparticular, tasks such as providing educan particular, tasks such as providing education to the growing younger generation, increasing attention to children in need of special education, improving educational methods and methods were set.

The peculiarities of mathematical concepts in mentally retarded students L. V. Kuznetsova, N. G. Morozova, A. A. Kataeva, E. A. Strebeleva's scientific work is considered. D. N. Isaev emphasizes that the cause of mental retardation is brain injury.

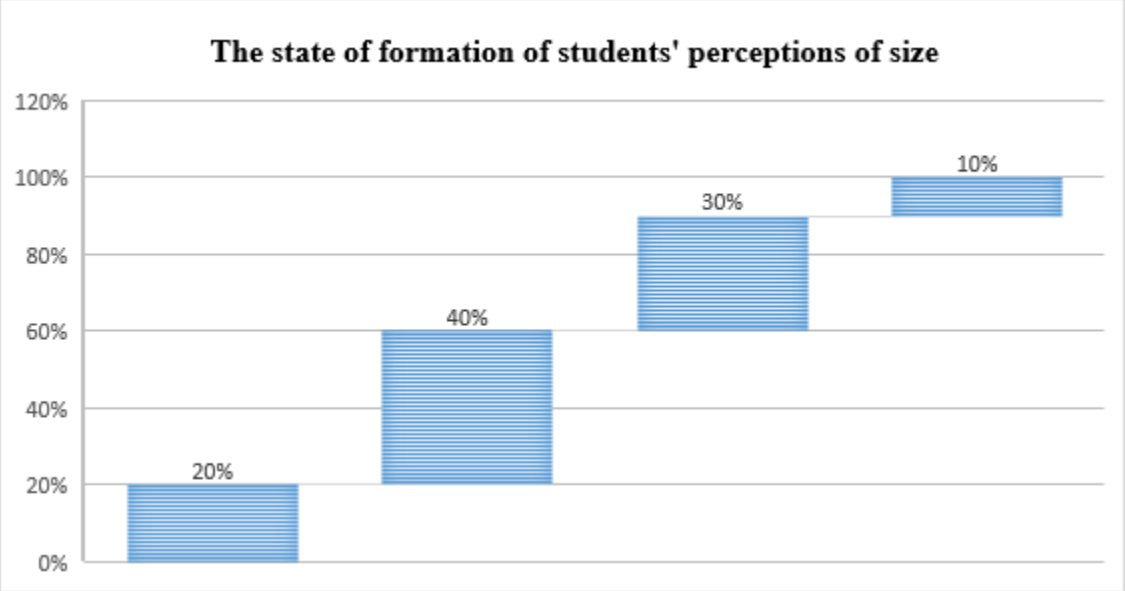
In the literature on special pedagogy, the problem of forming mathematical, in particular, quantitative concepts is considered by L.n n the literaIn the literatun the litn the liten the literature on special pedagogy, the problem of forming mathematical, in particular, quantitative concepts is considered by L. B. Baryaeva, G.V. Brijinskoy, A. P. Zarin, M. N. Perova, I. V. Reflected in research by Chumakova et al. The authors studied the features of the development of mathematical concepts and carried out research work on the most effective methods of their formation in preschool children with intellectual disabilities. At the same time, studies show that mentally retarded children in preschool age have difficulty applying existing knowledge and skills to new conditions, do not know how to use them in solving new problems. Very rarely, they are not able to independently apply mathematical concepts in independent everyday activities (including game activities), which leads to insufficient formation of acquired knowledge. At the same time, the practical application of mathematical knowledge in their various activities will help them to complete and understand. The study of elementary mathematical concepts in mentally retarded students V.t t the same t the same tt the same tit the samt the same time, t the samethe same time, tht the same timthe same time, the practical application of mathematical knowledge in their various activities will help them to complete and understand. The study of elementary mathematical concepts in mentally retarded students V. S. Azbukin, L. B. Baryaeva, N. Y. Boryakova, A. P. Zarin, O. P. Gavrilushkina, S. G. Eralieva, N. G. Morozova, G. M. Capustina, A. A. Kataeva, L. N. Lezina, N. I. Nepomnyashchaya, E. A. Strebeleva, I. V. This is reflected in the experimental studies of Chumakov. They reveal the theoretical and practical aspects of the formation of time, spatial, quantitative, geometric representations. Despite certain experience in the formation of elementary mathematical concepts of mentally retarded children, the issue of improving ways to teach elementary mathematical skills of a mentally retarded student to apply in everyday life in correctional-pedagogical work with currently mentally retarded children is important.

Based on the implementation of conversation, observation and methodologies, it made it possible to study the state of formation of elementary mathematical representations in mentally

retarded students and the skills of their application in everyday life. The results obtained were processed in terms of quantitative and qualitative analysis.

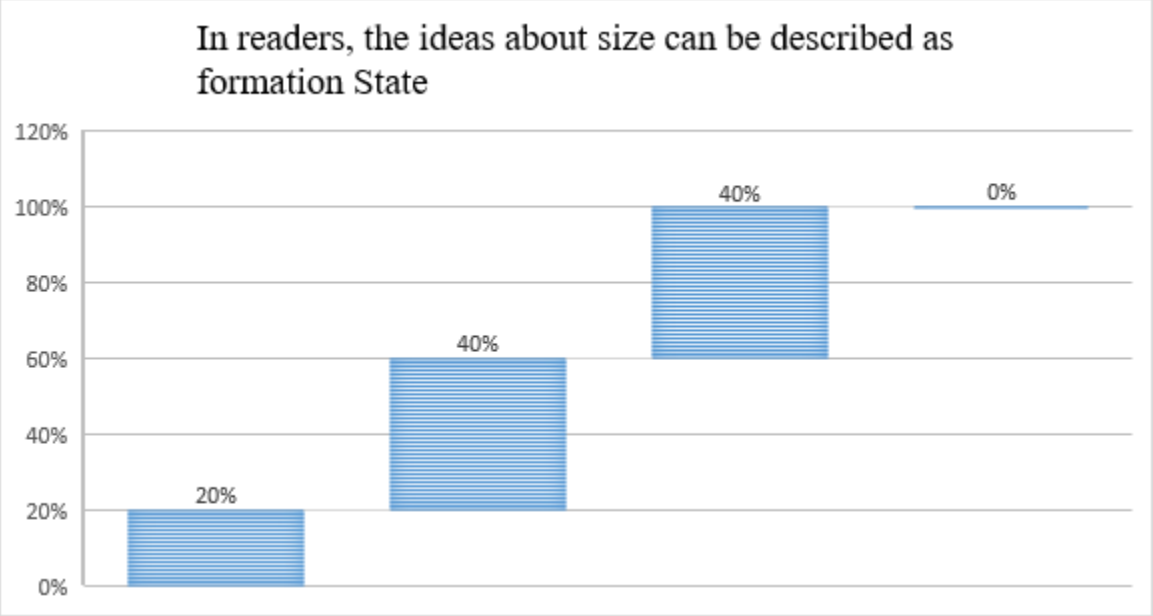
"Position by size" M. The data obtained in the process of applying the Montessori methodology was qualitatively analyzed. For example, when implementing the Nargiza "discriminate by size “methodology," what is the size of this ball – large or small?", gave a clear and convincing answerPosition by size" M. The data obtained in the process of applying the Montessori methodology was qualitatively analyzed. For example, when implementing the Nargiza "discriminate by size “methodology," what is the size of this ball – large or small?", gave a clear and convincing answer. There were no difficulties with the instruction" put all the big balls in this box, and all the small balls in this box." There were no difficulties with the cubes either. Also, "what did you put in the box?", to which he replied: "There are big balls in this box, small balls in this box.“When applying the” differ by size "methodology," victory also asks " what is the size of this ball – big or small?"answered correctly and reliably.lso, "what did you put in the box?", to which he replied: "There are big balls in this box, small balls in this box.“When applying the” differ by size "methodology," victory also asks " what is the size of this ball – big or small?"answered correctly and reliably. There were no difficulties with the instruction" put all the big balls in this box, and all the small balls in this box." Also placed cubes. 4 students placed only balls or only cubes. For example, when applying the Anwar” size-rich differentiation " methodology, “what is the size of this ball-large or small?"answered correctly and reliably. There was no difficulty in completing the task under the instruction" put all the big balls in this box, and all the small balls in this box". But when placing cubes on the same principle, there was a difficulty in understanding where the big cube is and where the small cube is.or example, when applying the Anwar” size-rich differentiation " methodology, “what is the size of this ball-large or small?"answered correctly and reliably. There was no difficulty in completing the task under the instruction" put all the big balls in this box, and all the small balls in this box". But when placing cubes on the same principle, there was a difficulty in understanding where the big cube is and where the small cube is. Sevara responded by asking “what size is this ball-big or small?", but hesitated. With the instruction" put all the big balls in this box, and all the small balls in this box", the movements often changed, made ambiguous movements. While placing cubes on the same basis, he had difficulty placing the large cube where and the small cube where.

With the help of the teacher allocated 3 students. For example, when applying the” differ by size " methodology, “what is the size of this ball-large or small?"correctlyith the help of the teacher allocated 3 students. For example, when applying the” differ by size " methodology, “what is the size of this ball-large or small?"correctly. With the instruction" put all the big balls in this box, and all the small balls in this box", he put all the.



Place students 'perceptions of size" by size " M. Results from the study based on the Montessori methodology Based on the results obtained from the study of the formation of the perception of senile pupils about size, we have identified the following levels.High levels were found in two students. Because without making a mistake, they spread both the cube and the ball according to size.The middle level was observed in 7 students, as they only put balls or only cubes and made 1 mistake;the lower-than-middle level was determined in 3 students, who put only balls or only cubes, and they needed the help of a teacher. The lower level was determined in 1 student, who could not complete the assignment.The middle level was observed in 7 students, as they only put balls or only cubhehe middle level was observed in 7 students, as they only put balls or only cubes and made 1 mistake;the lower-than-middle level was determined in 3 students, who put only balls or only cubes, and they needed the help of a teacher. The lower level was determined in 1 student, who could not complete the assignment.Data obtained during the application of the "Placement by Size" methodology (S. D. According to Zabramnaya) was qualitatively analyzed. The task of the" position by size " methodology was performed correctly by 2 children. When completing the assignment, instructions were given:"find similar objects, let them only be large, medium, small in size". They independently completed the task and told where it was big, where it was small. Nargiza, completed the assignment independently and confidently.The task of the" position by size " methodology was performed correctly by 2 children. When completing the assignment, instructions were given:"find similar objects, let them only be large, medium, small in size". They independently completed the task and told where it was big, where it was small. Nargiza, completed the assignment independently and confidently.4 students used different objects, not following the instruction" find only the same objects: large, medium, small". The ball, for example, received balloons larger. Did not work on the same subjects. 4 students, on the other hand, completed the assignment based on the teacher's auxiliary question "first try to find only the big and the small".

The situation of failure to complete the task was not observed.



"Arrange by Size" S. helps students understand the concept ofAr by Size" S. helps students understand the concept of size. D.ogy

Diagram 2.

The analysis of the results of the determining experiment made it possible to determine the degree of formation of their perception of size in mentally retarded readers. Among mentally retarded students who participated in the detection phase of the experimental study, the following levels were identified:

High levels were found in two students. Because without making a mistake, they spread both the cube and the ball according to size.The analysis of the results of the determining experiment made it possible to determine the degree of formation of their perception of size in mentally retarded readers. Among mentally retarded students who participated in the detection phase of the experimental study, the following levels were identified:

High levels were found in two students. Because without making a mistake, they spread both the cube and the ball according to size.

The middle level was observed in 4 students, because they put only balls or only cubes and made 1 mistake;

The level below the middle was determined in 4 students, who put only balls or only cubes, and they needed the help of a teacher.

The low level was not determined, the situation of inability to complete the task was not observed.

3. Solving simple problems

Information obtained in the process of applying a methodology for solving simple issues based on exhibitions (E.he level below the middle was determined in 4 students, who put only balls or only cubes, and they needed the help of a teacher.

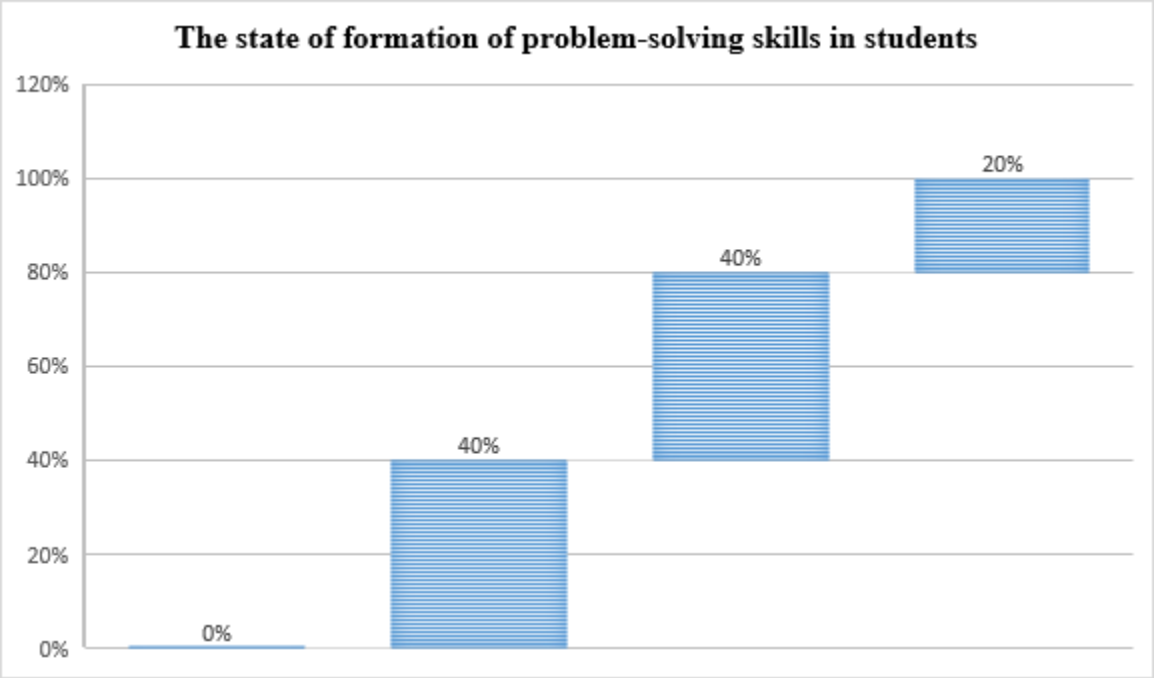
The low level was not determined, the situation of inability to complete the task was not observed.

3. Solving simple problems

Information obtained in the process of applying a methodology for solving simple issues based on exhibitions (E. F. Bortnikova) was qualitatively analyzed.

Mentally retarded readers solved both issues in solving issues on the basis of exhibitions, but they needed help in solving the issue, solving the issue as long as the auxiliary questions were applied.

In mentally retarded students who participated in the determining stage of the experimental study, the following levels were identified:



In solving simple problems presented in diagram 3, an analysis of the distribution of elementary mathematical concepts by level of development of students showed that the following levels were identified among students participating in the detection phase of the experimental study.

1. The high level was not determined. They could not fulfill the matter independently.

2. The middle level was observed in 4 students who solved the issue with the help of a teacher.n solving simple problems presented in diagram 3, an analysis of the distribution of elementary mathematical concepts by level of development of students showed that the following levels were identified among students participating in the detection phase of the experimental study.

1. The high level was not determined. They could not fulfill the matter independently.

2. The middle level was observed in 4 students who solved the issue with the help of a teacher. After the initial analysis with the teacher, they began to solve the problems.

3. The level below the middle was determined in 4 students. Solved the issue one.

4. The lower grade was determined in 2 students. They could not complete the task.

4. Quantitative imagination

"Adaptation" methodology. . The level below the middle was determined in 4 students. Solved the issue one.

4. The lower grade was determined in 2 students. They could not complete the task.

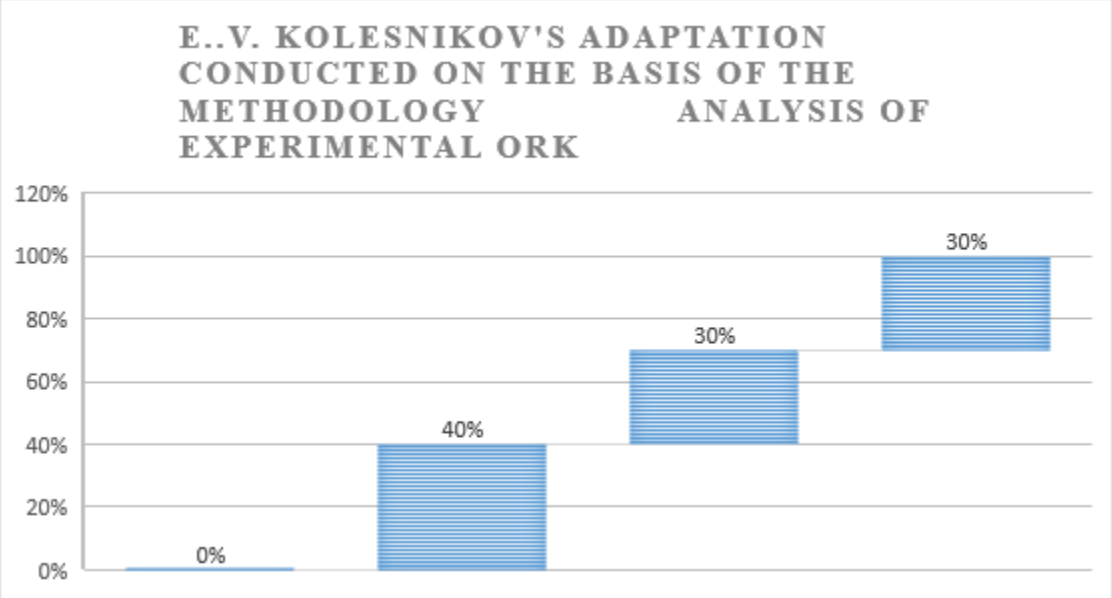
4. Quantitative imagination

"Adaptation" methodology

E. V. Kolesnikov's experimental work on the basis of the" adaptation " methodology was analyzed.

When applying the" matching "methodology, " calculate the number of points in cubes. Match the cube with the corresponding number."students who completed the assignment correctly were not identified. 4 students correctly calculated the number of points in the cubes. He made a mistake in matching the number to the number, but corrected the error himself.hen applying the" matching "methodology, " calculate the number of points in cubes. Match the cube with the corresponding number."students who completed the assignment correctly were not identified. 4 students correctly calculated the number of points in the cubes. He made a mistake in matching the number to the number, but corrected the error himself. Zafar, on the other hand, made mistakes when counting points in cubes, but found mistakes and corrected them. The number matching task was completed by himself.

With the help of a teacher, 3 students performed. When he counted the points, he was confused and was not careful. When asked to adjust the number with the number of points, he himself could not finish, but only did it with the help of the teacher. Faced with difficulties in beautiful calculation, he did not pay attention to his mistakes and did not count to the end. When asked to adapt, the teacher was asked for help.ith the help of a teacher, 3 students perfo.



In students, the calculation is based on the "adaptation" methodology (E. According to Kolesnikova) the following levels of development were identified: No reader was observed who matched the upper level objects and numbers and was not mistaken. The middle level was determined in 4 students. Adapted the subject and numbers, but made a mistake.In students, the calculation is based on the "adaptation" methodology (E. According to Kolesnikova) the following levels of development were identified:

No reader was observed who matched the upper level objects and numbers and was not mistaken.

The middle level was determined in 4 students. Adapted the subject and numbers, but made a mistake.

The lower-than-middle level included 3 students as they completed the task with the help of a teacher.

The low level was observed in 3 children. They were unable to complete the mission."Examples" methodology

Data obtained during the application of the "Examples" methodology (S.atata obtained during the application of the "Examples" methodology (S. D. On Zabramnaya) was qualitatively analyzed.

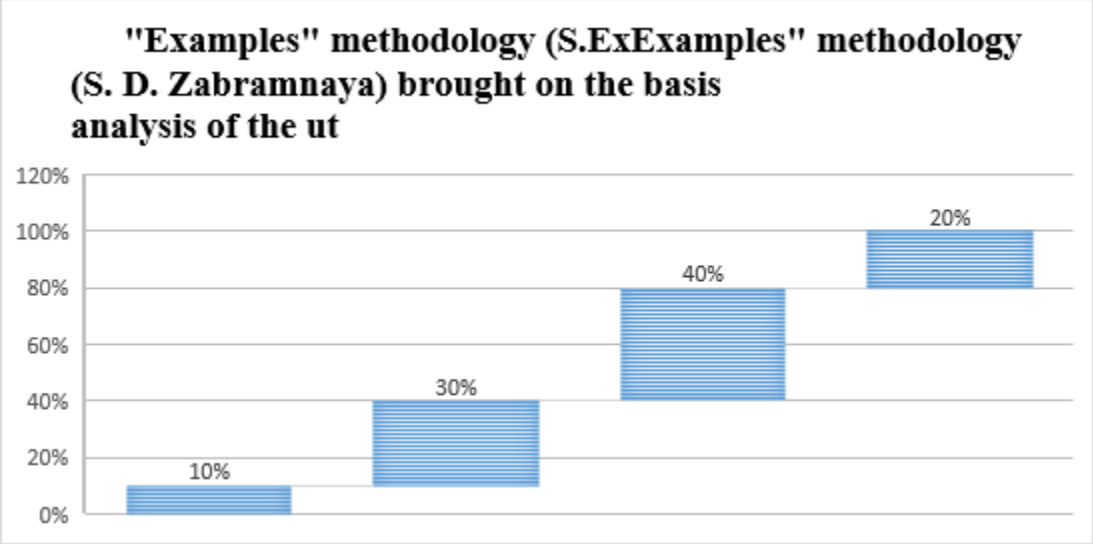
On the basis of the" examples " methodology, examples were offered to students. One student independently performed the task in solving the given examples, the help and advice of the teacher were not required.

5 students made mistakes in solving examples. In particular they had difficata obtained during the application of the "Examples" methodology (S. D. On Zabramnaya) was qualitatively analyzed.

On the basis of the" examples " methodology, examples were offered to students. One student independently performed the task in solving the given examples, the help and advice of the teacher were not required.

5 students made mistakes in solving examples. In particular they had difficulty solving examples of addition and subtraction past the decimal point. Zamira 8 + 6=, 14-6 = made mistakes in solving these examples.

4 students solved the examples with the help of a teacher. Nozima ruined the task, but demanded the help of the teacher. Iron completed the assignment with the instruction "solving examples", but required minor instructions from the teacher. Zafar, on the other hand, performed the task of solving the examples, but demanded important help and control from the teacher. 2 students did not solve the example.4 students solved the examples s students solved the examples with the help of a teacher. Nozima ruined the task, but demanded the help of the teacher. Iron co.



"Examples" methodology (S.ExExamples" methodology (S. D. Zabramnaya) is the level of student solving examples

The level of development in solving the examples presented in diagram 5 showed that among mentally retarded students who participated in the detection phase of the experimental study, the following levels were identified:

One student was identified in the upper grade. He solved the examples independently and correctly.

The middethodology (S. D. Zabramnaya) is the level of student solving examples

The level of development in solving the examples presented in diagram 5 showed that among mentally retarded students who participated in the detection phase of the experimental study, the following levels were identified:

One student was identified in the upper grade. He solved the examples independently and correctly.

The middle level included 3 children. They poured various errors when solving examples.

4 children below the middle were externalized. They solved the examples with the help of a teacher;

A low was found to have 2 children.

"Geometric figure"

Data obtained in the process of applying the" geometric figure " methodology (E. l low was found to have 2 children.

"Geometric figure"

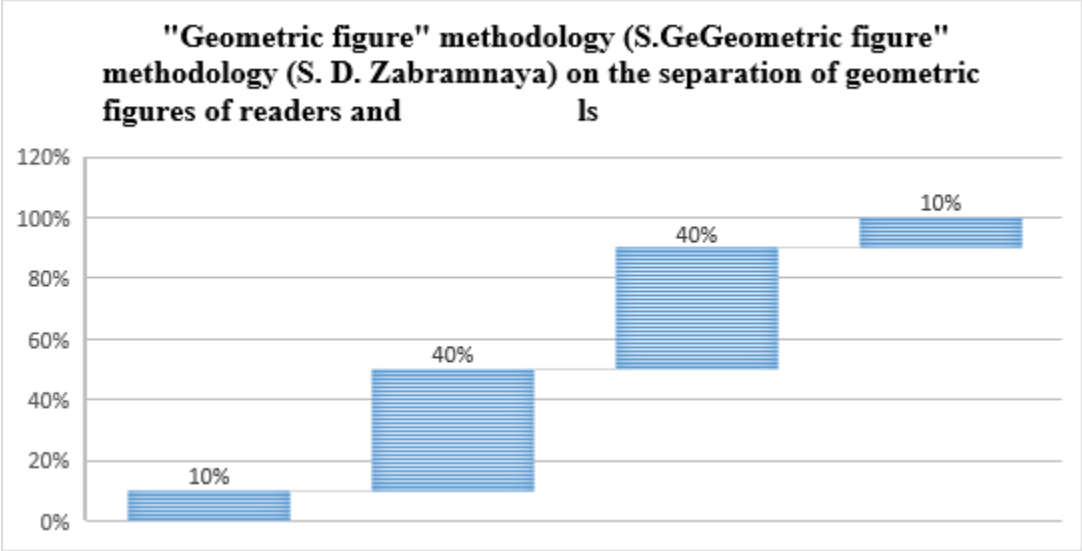
Data obtained in the process of applying the" geometric figure " methodology (E. V. According to Kolesnikova) was qualitatively analyzed.

Assignments on the" geometric figure " methodology were given by one student who counted all geometric shapes and named them;

4 students made mistakes when completing a task on the methodology of the" geometric figure". Calculate how many circles, triangular images there are, write your answer in boxes."Had difficulty distinguishing between oval and circle while completing his assignment. Zamira in turn replaced a rectangle with a square.

4 students completed the task with the help of the student teacher, but when differentiating between oval and circle, there were difficulties in counting the number. Nozima completed the assignment based on the Assistant questions of the teacher. For example, show the manga square?, what will all their sides be like? Separated geometric figures after questions **like.**

One student-failed to complete the assignment.



An analysis of the distribution of students by the degree of mastery of geometric shapes presented in diagram 6 showed that among mentally retarded students who participated in the detection phase of an experimental study, the following levels were identified:

One student was introduced to the upper level, who counted all the geometric shapes and named them.

The intermediate level was 4 students. Mistakes were admired by them in the laying of geometric figures.

The level below the middle was observed in 4 students. They completed the assignments with the help of a teacher.

The lower grade was determined in one student. He was unable to complete the assignment.

"Top" methodology

Data obtained in the process of applying the" Top " methodology (S.hehe level below the middle was observed in 4 students. They completed the assignments with the help of a teacher.

The lower grade was determined in one student. He was unable to complete the assignment.

"Top" methodology

Data obtained in the process of applying the" Top " methodology (S. E. On Gavrina) were qualitatively analyzed.

When applying the" Top "methodology, see " images. On the left side of the Hedgehog is offered a picture with a fish, on the right side with a bear, a parrot on top and a bee on the bottom. The objects depicted in the picture could not be found correctly in their location.

In completing the assignment, 3 students made mistakes. They were largely unable to separate the left and right sides. For example, Zafar, Timur hedgehog was confused by the pictures that stood on his right side and on his left.

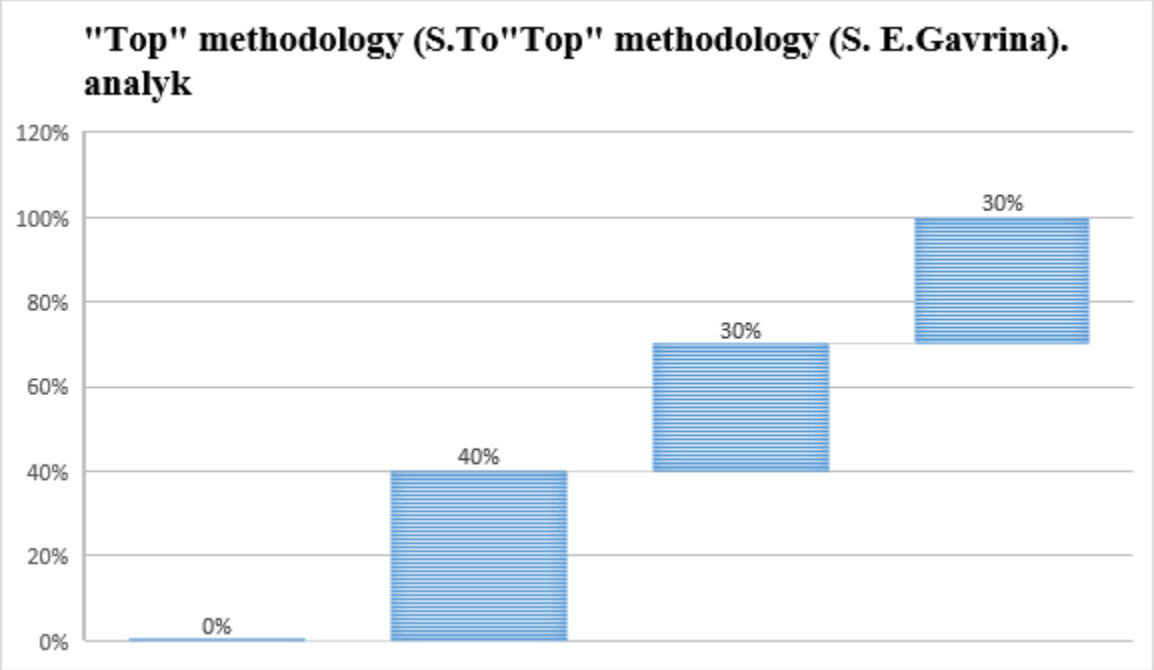
4 students completed the assignment with the help of a teacher. "Where's left?"Where's right? Where is the bottom? Where is the upper partIn completing the assignment, 3 students made mistakes. They were largely unable to separate the left and right sides. For example, Zafar, Timur hedgehog was confused by the pictures that stood on his right side and on his left.

4 students completed the assignment with the help of a teacher. "Where's left?"Where's right? Where is the bottom? Where is the upper part? They were encouraged to answer on the basis of questions such as

On the basis of the help of the teacher, the leading questions were: "Where is the left?"Where's right? Where is the bottom? Where is the top? and answered only after making a detailed analysis of each picture.

3 students were unable to complete the assignment.

A quantitative analysis of the division of students by grade is based on the "Top" methodology (s.n the basis of the help of th.



An analysis of the distribution of students by the level of development of spatial representations presented in diagram 7 showed that among mentally retarded students participating in the detection phase of an experimental study, the following levels were identified:

Students with a higher grade were not identified.

2. The middle level was observed in 4 students. They made mistakes when completing the task.

3.analysis of the distribution of students by the level of development of spatial representations presented in diagram 7 showed that among mentally retarded students participating in the detection phase of an experimental study, the following levels were identified:

Students with a higher grade were not identified.

2. The middle level was observed in 4 students. They made mistakes when completing the task.

3. A low average level was found in 3 students. They completed the task with the help of the teacher.

4. The lower level included 3 students. They were unable to complete the mission.

"Agenda" methodology

The task" fill out the missing days of the week "in the" agenda " methodology was correctly completed by one student. Also " " look at the pictures. Tell me what time of day they describe" did not cause any difficulties in performing the task.

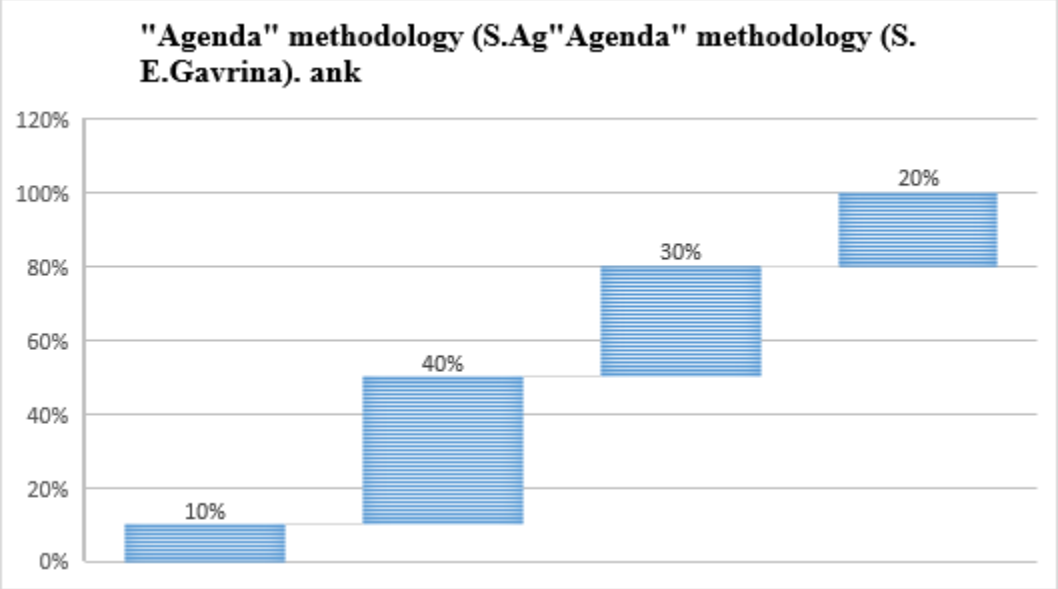
4 students wrote the missed days at the teacher's suggestion when completing the task" write down the missing days of the week in space". For the assignment "look at the pictures. Tell me what time of day they describe ", did not cause any difficulties.

The assignment of" write down the missing days of the week in space " was completed by 3 students with errors. Days of the week were renamed. Nargiza wrote that after Monday comes Thursday. Looking at the picture, the pieces of milk were replaced when telling what time of day was depicted. Timur, for example, could not divide the night with the evening. The assignment of" write down the missing days of the week in space " was completed by 3 students with errors. Days of the week were renamed. Nargiza wrote that after Monday comes Thursday. Looking at the picture, the pieces of milk were replaced when telling what time of day was depicted. Timur, for example, could not divide the night with the evening.

4 students completed the task with the help of the teacher and leading questions. On weekdays and cutlery were performed on the basis of the help of the teacher.

2 children did not complete the task.

The students' performance over time is shown in Figure 8.



The following levels were determined by the level of development of their perception of time presented in diagram 8.

1. The upper level was observed in one student, told the days of the week and pieces of milk

2. At the Intermediate Level, 4 students were identified. They made mistakes in telling the agenda.

3. Below the middle was 3 students.

4.he following levels were determined by the level of development of their perception of time presented in diagram 8.

1. The upper level was observed in one student, told the days of the week and pieces of milk

2. At the Intermediate Level, 4 students were identified. They made mistakes in telling the agenda.

3. Below the middle was 3 students.

4. Two students at the lowest level were unable to complete the task.

The results of the research carried out analysis of the study of the state of development of elementary mathematical representations of students were shown in the diagram the concepts of magnitude, solving simple problems, number and number, geometric figures, spatial and temporal. The results of our study were evaluated among mentally retarded students with low and moderate levels of elementary mathematical imagination and skills for their application in everyday life. Yexperimental requires correctional and developmental work on the formation of elementary mathematical representations and their application in the daily life of mentally retarded students involved in the detection phase of the study.

Mentally retarded students experience the first stage of cognition - cognitive deficits. The peculiarity of the perception of mentally retarded students is determined by the fact that it takes a long time to perceive the teaching materials being given, difficulty in distinguishing the main things, important signs and symptoms, does not understand the internal connection between the parts in the integrity.

Mentally retarded students had great difficulty applying elementary mathematical concepts. In this regard, we consider that it is necessary to develop a system of Correctional-pedagogical work, taking into account the fact that the use of didactic games of mathematical content in the process of forming elementary mathematical representations gives positive results to a more meaningful and conscious assimilation of elementary mathematical representations and their application in everyday life.

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