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IBI (India) = 4.260
OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 07 Volume: 99

Published: 05.07.2021 <http://T-Science.org>

QR – Issue



QR – Article



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SOME FEATURES OF THE USE OF DIDACTIC GAMES IN MATHEMATICS LESSONS IN THE FORMATION OF MENTAL AND PSYCHOLOGICAL PROCESSES OF STUDENTS

Abstract: The article highlights the leading role of didactic games, fascinating, logical exercises in the formation of students in grades 5-6 mental and psychological processes at the middle stage of teaching mathematics. An individual and interpersonal approach to teaching the subject of mathematics is presented as an annual report on the work of subjects in the natural science cycle.

Key words: fascinating games, logic games, visual games, didactic games, speech development, thinking development, interest to training, technique of mathematics teaching, development training, middle school.

Language: English

Citation: Miniakhmetov, A. A., & Khamzina, E. A. (2021). Some features of the use of didactic games in mathematics lessons in the formation of mental and psychological processes of students. *ISJ Theoretical & Applied Science*, 07 (99), 17-20.

Soi: <http://s-o-i.org/1.1/TAS-07-99-5> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.07.99.5>

Scopus ASCC: 3304.

Introduction

UDC 332.12

The mental overload of middle-level students (especially grades 5-6) in mathematics lessons becomes the reason for their rapid fatigue, a decrease in interest in learning, due to which the process of teaching the subject as a whole becomes ineffective and of poor quality.

Arousing children's interest in the mathematical material being studied and making them active throughout the lesson is the main task that is part of

the direct responsibilities of a modern teacher, especially a young specialist [1].

The emergence of interest in the subject of mathematics among students of grades 5-6 largely depends on how the modern lesson is built, according to the methodological requirements. To stimulate interest, it is important to apply modern didactic techniques, logical and developmental tasks. As a rule, interest in the subject develops early. Not only in the lower grades, is it necessary to reveal the attractive aspects of mathematics, but also at the beginning of the middle stage of education to continue this process [2].

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In this regard, the purpose of this work is to consider and reveal the enormous importance of the use of didactic games in mathematics lessons in the middle link, fascinating and logical exercises that combine the functions of education, development and upbringing.

The objects of the research were students of the 5A class of the 2020-2021 academic year of study of the specified school [3] – Askino Secondary School №1, Republic of Bashkortostan, Russian Federation.

We believe that for the development of logical thinking and cognitive activity, students need to solve puzzles, play magic squares, ask funny questions and find witty answers to tricky logical problems. In mathematics lessons, the main source of desires and aspirations of middle-level schoolchildren for mental work can be their own interests. Therefore, a modern and young teacher must find accessible techniques and teaching aids for those mathematical and logical problems that he offers to his wards.

To arouse students' interest in mathematics, we not only draw their attention to its individual elements, but try to surprise with the created mathematical situation. In an unexpected situation, unpleasant surprise usually arises. Therefore, in the initial classes, situations should be created that cause only kind amazement.

It should be borne in mind that surprise and amazement are associated with the interests of students, with their desire to see something new against a mathematical background, with knowledge that they did not know until now [4]. Experience shows that the combination of surprise and amazement with the interests of students contributes to the creation and formation of their active mental activity in the lesson.

In the process of developing students' interest in mathematics, we also use some general criteria for teaching and presenting the material of the current lesson. In the lessons with the use of mathematical games, fascinating and logical exercises, we regularly achieve the organization of work from each student; we bring their thinking abilities to the maximum level to complete all tasks. This means that all math games and exciting logic exercises suggested by the teacher should be understandable for every student. Otherwise, the material may seem insignificant to children and will not create interest in them.

In turn, in order to maintain this interest, before each new work, the student must have certain knowledge on the topics covered. According to our observations [5], only when creating a connection between the new material and the old is sharpness and quickness of understanding manifested, and the use of old knowledge and skills or the use of only new ones significantly weakens the interest in performing the proposed tasks. Therefore, the optimal balance between demonstrated knowledge and accumulated

skills creates the condition for maintaining a long-term interest in math problems.

An analysis of modern research by scientists and the advanced experience of educators of innovators [6] show that didactic games, fascinating logical exercises, organized in accordance with the curriculum, primarily form mental and psychological processes in students, provide physical development and contribute to the upbringing of important moral qualities, since games enrich feelings, perception, representation, thinking.

In the course of the mathematical game in the lesson, we give students in an understandable form an idea of the norms of social behavior, morality. In the development of morality and interest, our didactic games of a mathematical sense are of great importance, they help to instill good feelings in students, teach not to retreat, even if a failure occurs, aim at winning and continuing the game.

However, there is also the problem of increasing the activity of students in the study of mathematical laws [7], which is very relevant at the present stage. Therefore, when we say "activity in teaching mathematics", we mean learning in the learning process, striving for mental activity, achieving goals by willpower.

Our annual experiments and observations show that mathematics as a school subject is both difficult and exciting. With the aim of developing students in grades 5-6 will, attention, the ability to think accurately and consistently, to arouse their interest in mathematics, we additionally conduct within the framework of the decade, some lesson and extracurricular activities (for example, "Number Pi").

In accordance with the curriculum chosen by the school and the compiled calendar-thematic planning, one of such events is training in the form of didactic games of the mathematical direction. We fully support the idea [8], where the famous teacher K.D. Ushinskij considered games to be independent creativity of children and proved that nothing can replace them.

Undoubtedly, many schools in all countries and individual teachers widely use didactic games of a mathematical nature. We are convinced that games in the lesson should be organized in such a way that they contribute to the diversity of the educational process, serve didactic purposes, and become an integral part of it, since games improve students' abilities, activate their activities, make students think and express thoughts in words.

Our psychological and mental teaching methods are confirmed by Professor N. Kyazimov, who in this regard notes the following: when a student works by speaking, then along with thinking, he develops speech, because, expressing his thoughts, he chooses and uses words available to him, his thought and speech are formed in unity [9]. Didactic games of the mathematical direction, fascinating and logical exercises with specific goals and requiring the

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solution of appropriate problems in the learning process, serve to increase the effectiveness of the educational process and conduct it at a high level, solid mastery of the current material.

Therefore, in mathematics lessons, we use didactic games in order to eliminate absent-mindedness and fatigue in students. We approach students in such a way that they all, regardless of their desires and will, direct their attention to the assigned work. So, well-organized didactic games in our mathematics lessons improve the mood of students, eliminate their fatigue, educate and develop will, create favorable opportunities for education, psychological development, and the formation of students' outlook.

We organize didactic games of the mathematical direction in such a way that their content contributes to the strengthening of the mental activity of students, and does not create an atmosphere of heaviness, fatigue and fear.

In the middle grades, especially the 5-6 stages of education, didactic games of the mathematical direction according to their goals, objectives, content, forms of teaching and fun we divide into the following types as verbal, mathematical and visual games [10], which we actively introduce in our teaching activities.

(1) The *word games* we use during the academic year in relation to grade 5A schoolchildren refer to mathematics, Russian, English and Bashkir as a national component in the Republic of Bashkortostan. They form the skill of oral calculations, enrich vocabulary, develop oral speech, and help in the assimilation of pronunciation norms.

Sometimes, in combined lessons (for example, mathematics, computer science and information technologies), we choose games that contribute to the deep assimilation of new material and create a clear understanding of the topic among students. Through such games, information related to the properties of one or another object or event is also consolidated.

(2) *Mathematical games*, also used by us in grade 5A, serve to develop students' computational skills and abilities. In the process of mathematical and logical games, the tasks and exercises we set before the students make them think and calculate, find the answer. Namely, in this process, students develop mathematical thinking [11].

Therefore, in organizing such a game, we create such a critical situation [12] so that the student will certainly reflect on the problem to be solved and find the answer on his own. Mathematical games are more organized in mathematics lessons, sometimes used in computer science lessons, for example, in the joint study of the topic "Rectangular coordinate system" [13].

As experience shows, mathematical games can be used in the lessons of the Russian language, English, Bashkir language, geography, biology and other related disciplines. In the process of teaching

these subjects, in particular certain topics (for example, natural phenomena, changes in the seasons, trigonometric and spatial representations, time and its measurement, etc.), we use mathematical games that allow us to generalize and systematize the students' knowledge gained in different lessons, and also develop interdisciplinary connections.

(3) When conducting *visual didactic games* of the mathematical direction, students of grade 5A clearly see the known sides of the desired problem and in different problems it is relatively easy to find the unknown. As a rule, such games require students to be strictly observant and to be able to compare. At the same time, we, as teachers, take care of the development of our students' ability to give the correct conclusion [14].

Thus, taking into account the author's works [15], our teaching activity considers and provides for the following most important aspects and conclusions.

(1) Almost all the students we teach, despite their academic performance, not only see, compare, find, but also express all this clearly, accurately, in all understandable language.

(2) Our visual didactic games of the mathematical direction, compiled and developed independently as part of the preparation of the current lesson, are always aimed at developing students' speech and thinking.

(3) Visual didactic games of mathematical orientation are not long and do not take the entire lesson.

(4) Visibility in mathematics lessons (for example, presentations) helps to quickly find what you are looking for. In the process of games, it is possible to use plot pictures, tables, diagrams, handouts.

(5) Any material of the current lesson of mathematics refers mainly to known problems studied and studied.

(6) Materials related to unknown problems of mathematics are usually misleading, which leads to erroneous and inaccurate results of students' work.

(7) Visual didactic games of the mathematical aspect allow each student, through comparison, to find similar and distinctive features of the problem being solved.

In conclusion, we want to add that all visual didactic games of the mathematical direction of the natural science cycle accelerate the pace of a modern lesson.

This is especially acute as a result of the reduction in the duration of the lesson from 45 minutes to 35-40 minutes, due to the COVID-19 coronavirus infection pandemic, as well as the partial transition to a distance learning format (30 minutes).

Therefore, in such a short time of the lesson, our methods and approaches develop students' observation and ability to analyze, as well as develop their speech and thinking.

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Research into new methods of teaching and teaching the school mathematics course, from the point of view of mental and psychological aspects,

requires further serious scientific research and explanations.

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