

**INTEGRATIVE ORGANIZATION OF 5TH-6TH GRADE MATHEMATICS LESSONS  
 BASED ON THE MRT APPROACH IN THE MBLOCK V5.4.3 ENVIRONMENT**

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This thesis is devoted to the issue of increasing educational efficiency by combining the Material-Digital-Symbolic (MDS) approach with the mBlock v5.4.3 visual programming environment in the process of teaching mathematics in grades 5–6 of secondary schools. The didactically based use of digital technologies in modern education serves to develop students' deeper understanding of mathematical concepts, analysis of logical connections, and algorithmic thinking skills [1].

In lessons organized on the basis of the MDS approach, students first perform practical activities using material objects, then model mathematical processes in a digital environment and systematize knowledge using symbolic expressions [2]. The mBlock v5.4.3 program allows expressing mathematical problems in an algorithmic sequence, creating interactive models and simulations through the possibilities of block visual programming. This serves to increase students' interest in subjects, form independent thinking, and develop competencies in finding effective solutions to problem situations [3].

The results of the study show that the integration of the MRT approach and the mBlock environment in mathematics education in grades 5–6 not only increases the interactivity of the learning process, but also helps students combine practical and theoretical knowledge, develop the ability to find algorithmic solutions to problem situations. Thus, this approach, as an innovative pedagogical method, allows you to significantly increase students' interest in subjects and educational effectiveness.



This picture visually represents the idea of integrative organization of mathematics lessons for grades 5-6 based on the MRT (Material-Digital-Symbolic) approach with the mBlock v5.4.3 environment. It highlights the educational process in three stages: Material stage - students carry out practical activities with real objects (cubes, shapes, objects). This stage serves to understand mathematical concepts through intuition. Digital stage - using the mBlock v5.4.3 visual programming environment, mathematical processes are modeled, algorithms are developed, and interactive simulations are created. Symbolic stage - knowledge is generalized and systematized through mathematical formulas, symbols, schemes, and models. The picture shows these stages as interconnected, and it is emphasized that they lead to the development of algorithmic thinking, interactive lessons, and problem-solving skills. Finally, the pedagogical effect is reflected in the increased interest in subjects among students, the harmony of theory and practice, and the formation of digital competencies.

In conclusion, the combined use of the MRT approach and the mBlock program as an innovative method in mathematics education for grades 5–6 shows high pedagogical effectiveness. At the same time, the lessons are interactive and interesting, helping students consolidate their theoretical knowledge with practice, form algorithmic thinking, and develop skills in the effective use of digital technologies.

### References.

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