IMPLEMENTATION OF INNOVATIVE TECHNOLOGIES IN THE FORMATION OF MATHEMATICAL COMPETENCES IN PRIMARY SCHOOL CHILDREN

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Abstract: *The article considers the current problem of introducing innovative technologies into the educational process of primary school in order to improve the effectiveness of the formation of mathematical competencies in primary school students. Currently, a high level of development of mathematical thinking is one of the main characteristics of a comprehensively developed personality. The initial stage in the system of continuous mathematical education is considered to be primary school. The main goal of mathematical education has transformed from mastering a certain amount of subject knowledge to understanding the importance of this knowledge and the ability to successfully use it in practice. In this regard, there is a need to turn to innovative technologies, which have recently received wide recognition in the theory and practice of all areas of professional activity. Having analyzed modern approaches to the use of information and communication technologies (ICT), electronic educational resources and gaming teaching methods, it is worth paying attention to the influence of innovative technologies on the motivation of students, the development of critical thinking and independence in mastering mathematics.[1]*

Keywords: *innovative technologies, mathematical competence, primary school students, information and communication technologies, electronic educational resources, gaming technologies.*

Introduction

The development of mathematical competence in primary school is an important component of general education, providing students with the knowledge, skills and abilities necessary for further mastering of the school curriculum. In recent years, the rapid development of technologies has increasingly created the need to use them in the educational process. The introduction of innovative technologies in the educational process involves not only the use of new methods and tools, but also a change in the general approach to learning,[3] which is an important step towards improving the quality of education and the formation of competencies necessary for children to successfully socialize in modern society.

Use of innovative technologies in the educational process

Innovative technologies in the educational sphere can be defined as new methods, techniques, approaches and means that use modern achievements of science and technology to improve the process of teaching and upbringing.[2] In recent decades,

information and communication technologies (ICT), electronic educational resources, as well as game and project-based teaching methods have been widely used.

1. The introduction of ICT in the process of forming mathematical competencies in primary school students contributes to the creation of an individualized approach to learning. With the help of multimedia technologies, it is possible to visualize complex mathematical concepts, create interactive tasks that allow students to work at a pace that is convenient for them. Programs such as geometric and arithmetic simulators, as well as educational platforms such as Khan Academy, allow students to master mathematical disciplines easily and in an exciting way. It is important to note that the use of ICT contributes to the development of logical thinking and critical reflection in schoolchildren.[5]

2. Modern electronic educational resources provide enormous potential for developing mathematical competencies. Software for creating and completing exercises, tests, and quests not only helps improve problem-solving skills, but also makes learning more interesting and accessible. It is especially important to use platforms such as Yandex.Textbook, Uchi.ru, and others, which allow students to independently explore and solve problems of varying complexity, as well as receive feedback from the system in real time.[5]

The Impact of Innovative Technologies on Mathematical Competencies

1. Developing Critical and Creative Thinking

Innovative technologies stimulate the development of critical and creative thinking in younger students. For example, solving problems using ICT requires children to be able to analyze information, identify patterns, and apply innovative approaches to solving mathematical problems. Game elements can be used to teach problem solving, where not only the correct execution of operations is important, but also creativity in the approach. Visualizing information through infographics, video tutorials, animations, and diagrams helps students better analyze and perceive complex concepts. When students interact with multimedia materials, they learn to recognize logic and patterns, draw conclusions, and build cause-and-effect relationships, which contributes to the development of critical thinking.

2. Increasing motivation for learning

Innovative technologies, in particular interactive applications and platforms, can significantly increase student motivation. Intrinsic motivation occurs when students find interest and satisfaction in the learning process. Extrinsic motivation is associated with external rewards or punishments, such as grades. However, intrinsic motivation is more sustainable and effective for long-term academic success. The use of innovative technologies in teaching mathematics helps to develop both intrinsic and extrinsic motivation in students. Interactivity, accessibility of materials, and individualization of learning create conditions in which students can more actively participate in the learning process and show initiative.[4]

3. Reducing stress and anxiety

The use of digital technologies can help reduce stress and anxiety in younger students. Instant feedback systems allow children to master difficult topics faster, and the ability to repeatedly complete tasks reduces the fear of making mistakes. In particular, programs and platforms that allow children to work with mistakes enable students to gradually master the material without feeling pressure. Thanks to the variety of formats (animated video lessons, quizzes, simulators) [3], children perceive new material more easily. Interaction with technology makes learning more dynamic and adaptive, which in turn contributes to an increase in interest in mathematics.

Conclusion

The introduction of innovative technologies in the process of developing mathematical competencies in secondary school students is a necessary step towards quality education. Modern ICT, electronic educational materials and game methods not only contribute to better assimilation of mathematical knowledge, but also develop such important skills in children as critical thinking, independence and a creative approach to problem solving. It is important that educational institutions continue to implement innovative methods and approaches to help students succeed in a rapidly changing technological society.

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