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Eureka Journal of Artificial Intelligence and Data Innovation (EJAIDI)

ISSN 2760-5000 (Online) Volume 2, Issue 4, April 2026

https://eurekaoa.com/index.php/11

DEVELOPING INCLUSIVE COMPETENCIES IN MATHEMATICS TEACHING METHODS

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Abstract:
This article examines the development of inclusive teacher competencies in mathematics teaching in a modern education environment. It examines the essence of inclusive competencies, their structure, and their importance for ensuring students' equal access to educational resources. Particular attention is paid to the specifics of teaching mathematics in an inclusive environment, including the need to consider individual learning needs, differentiate content, and adapt teaching methods.

The paper analyzes effective pedagogical approaches that promote the development of inclusive competencies, such as differentiated instruction, universal learning design, the use of digital technologies, and the organization of collaborative activities. The role of the teacher in creating a supportive educational environment focused on the support and development of each student is also explored.

Current challenges in implementing inclusive education, including insufficient teacher training and limited methodological resources, are examined separately, and possible solutions are proposed. A conclusion is reached regarding the need for a systematic approach to developing the professional competencies of mathematics teachers as a key factor in the successful implementation of inclusive education principles.

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Keywords: INCLUSIVE education, teacher competencies, mathematics teaching, differentiated learning, universal learning design, educational environment.

РАЗВИТИЕ ИНКЛЮЗИВНЫХ КОМПЕТЕНЦИЙ В МЕТОДАХ ПРЕПОДАВАНИЯ МАТЕМАТИКИ

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Аннотация:
Статья посвящена проблеме развития инклюзивных компетенций учителя в процессе преподавания математики в условиях современного образования. Рассматривается сущность инклюзивных компетенций, их структура и значение для обеспечения равного доступа обучающихся к образовательным ресурсам. Особое внимание уделяется специфике обучения математике в инклюзивной среде, включая необходимость учета индивидуальных образовательных потребностей, дифференциации содержания и адаптации методов обучения.
В работе проанализированы эффективные педагогические подходы, способствующие развитию инклюзивных компетенций, такие как дифференцированное обучение, универсальный дизайн обучения, использование цифровых технологий и организация коллаборативной деятельности. Также раскрывается роль учителя в формировании благоприятной образовательной среды, ориентированной на поддержку и развитие каждого обучающегося.

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Отдельно рассматриваются актуальные проблемы внедрения инклюзивного образования, в том числе недостаточная подготовка педагогов и ограниченность методических ресурсов, а также предлагаются возможные пути их решения. Делается вывод о необходимости системного подхода к развитию профессиональных компетенций учителя математики как ключевого фактора успешной реализации принципов инклюзивного образования.

Ключевые слова: инклюзивное образование, компетенции учителя, преподавание математики, дифференцированное обучение, универсальный дизайн обучения, образовательная среда.

Introduction

Modern education is focused on ensuring equal access to quality education for all categories of students, regardless of their individual characteristics, level of preparation, and health status. In this regard, the development of inclusive competencies for teachers, including mathematics teachers, is particularly relevant. Mathematics as a subject is highly abstract and logically rigorous, which can create additional difficulties for students with special educational needs.

The purpose of this article is to examine the essence of inclusive competencies and identify effective methods for their development in the teaching of mathematics.

Inclusive competencies are a set of knowledge, skills, and personal qualities of a teacher that enable them to effectively organize the educational process while taking into account the diversity of students. The main components of inclusive competencies include:

• Cognitive component – knowledge of the developmental characteristics of various categories of students;

• Methodological component – mastery of adapted teaching methods;

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• Communicative component – the ability to build interactions with students and their parents;
• The reflective component is the ability to analyze and adjust one's own teaching activities.

In the context of teaching mathematics, these competencies are particularly important, as they require a transformation of traditional teaching approaches.

Mathematics requires developed abstract thinking, logic, attention, and memory. Students with special educational needs may experience difficulties in these areas, necessitating the adaptation of teaching content and methods.

Key features of inclusive mathematics education include:
• differentiation of tasks by level of difficulty;
• use of visual aids and practice-oriented tasks;
• slower pace of material delivery;
• repetition and systematization of knowledge;
• consideration of individual educational pathways.

It is important to note that inclusion does not imply simplification of content, but rather the creation of conditions for its accessible acquisition.

The development of inclusive competencies is possible through the implementation of modern pedagogical technologies and methodological approaches.

Differentiation allows for the consideration of the individual characteristics of students. The teacher can offer tasks of varying difficulty levels and vary the format of work (individual, group, paired). The principles of universal learning design include:
• presenting information in different formats (text, graphics, video);
• providing a variety of ways to complete tasks;
• stimulating motivation through choice and interest.

Digital tools help adapt the learning material. For example:
• interactive platforms;

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• visualization of mathematical concepts;
• use of educational applications.

Group work promotes socialization and mutual support. Students with different levels of preparation can interact effectively, complementing each other. Particular attention is paid to the development of: logical thinking; problem-solving skills; and the ability to explain mathematical reasoning.

The mathematics teacher is a key figure in creating an inclusive environment. Their professional stance should include:

• acceptance of student diversity;
• commitment to lifelong learning;
• flexibility in choosing teaching methods;
• collaboration with psychologists and special education teachers.

An effective teacher creates a supportive atmosphere where every student feels valued and successful.

Despite the development of inclusive education, certain challenges remain:

• lack of teacher training;
• limited methodological resources;
• heavy teaching load;
• psychological unpreparedness of participants in the educational process.

Solutions:

• professional development of teachers;
• development of methodological recommendations;
• implementation of mentoring practices;
• use of an interdisciplinary approach.

Developing the inclusive competencies of mathematics teachers is a prerequisite for the successful implementation of inclusive education. Modern teaching methods make it possible to adapt mathematical content without losing its scientific significance. An inclusive approach not only promotes educational

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outcomes but also fosters a tolerant society that values diversity and equal opportunity.

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