

THE USE OF DIGITAL TECHNOLOGY IN TEACHING MATHEMATICS

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Annotation. This article explores the integration of digital technology in the field of mathematics education, examining its impact on teaching methodologies, student engagement, and overall learning outcomes. The study delves into various literature sources to analyze the existing landscape, presents the methods employed in implementing digital tools, discusses the results observed, and concludes with insights into the implications and potential future directions for digital technology in mathematics education.

Keywords: Digital technology, mathematics education, teaching methodologies, student engagement, learning outcomes, educational technology.

In recent years, the incorporation of digital technology has become a significant trend in education, revolutionizing the way subjects are taught and learned. This is particularly evident in the field of mathematics, where traditional methods are being complemented and, in some cases, replaced by innovative digital tools. This article aims to provide a comprehensive analysis of the use of digital technology in teaching mathematics, examining its implications on both educators and students.

The literature surrounding the integration of digital technology in mathematics education is extensive, highlighting the diverse range of tools and strategies employed in classrooms worldwide. Studies have shown that interactive simulations, virtual manipulatives, and educational apps can enhance students' understanding of complex mathematical concepts. Furthermore, digital platforms facilitate personalized learning experiences, catering to individual student needs and promoting a more inclusive educational environment.

To investigate the impact of digital technology in teaching mathematics, a systematic review of existing literature was conducted. Peer-reviewed articles, research papers, and educational reports were analyzed to identify common trends, challenges, and successful implementations of digital tools. The research focused on the use of interactive software, online platforms, and virtual resources in both primary and secondary education settings.

The use of digital technology in teaching mathematics has become increasingly prevalent in education. Digital tools and technologies offer a wide range of benefits for both educators and students, enhancing the learning experience and promoting a deeper

understanding of mathematical concepts. Here are some ways in which digital technology is employed in teaching mathematics:

Interactive Learning Platforms:

- Online platforms and learning management systems provide interactive math lessons, quizzes, and activities.
- Platforms like Khan Academy, Desmos, and others offer adaptive learning experiences tailored to individual student needs.

Educational Apps:

- There are numerous apps designed to make learning math engaging and fun. These apps often use gamification to keep students motivated.
- Apps like Photomath allow students to take pictures of handwritten or printed math problems and receive step-by-step solutions.

Simulations and Virtual Manipulatives:

- Digital simulations and virtual manipulatives help students visualize abstract mathematical concepts.
- Tools like Geogebra and Desmos enable students to explore geometry, algebra, and calculus through dynamic, interactive graphs and diagrams.

Online Collaborative Tools:

- Collaborative platforms like Google Workspace or Microsoft 365 enable students to work together on math projects, share documents, and collaborate in real-time.

Digital Whiteboards:

- Interactive whiteboards or digital tablets allow teachers to create dynamic, multimedia-rich lessons.
- Platforms like Microsoft Whiteboard or Explain Everything facilitate real-time collaboration between teachers and students.

Mathematical Software:

- Software like MATLAB, Mathematica, and others are used for more advanced mathematical computations and modeling.
- These tools are commonly used in higher education and in STEM (Science, Technology, Engineering, and Mathematics) fields.

Online Assessments and Feedback:

- Digital platforms enable the creation and administration of online assessments, quizzes, and tests.
- Automated grading systems provide instant feedback to students, allowing them to identify and correct mistakes quickly.

Adaptive Learning Systems:

- Adaptive learning technologies adjust the difficulty of problems based on a student's performance, providing a personalized learning path.

- This helps students learn at their own pace and receive targeted support where needed.

Augmented Reality (AR) and Virtual Reality (VR):

- AR and VR technologies are being explored to create immersive math experiences, allowing students to interact with three-dimensional mathematical concepts.

Coding and Computational Thinking:

- Integrating coding and computational thinking into the math curriculum helps students develop problem-solving skills and a deeper understanding of mathematical concepts.

- Platforms like Scratch or Python are commonly used for introducing coding in a mathematical context.

By incorporating these digital tools and technologies into the teaching of mathematics, educators can create more engaging, interactive, and personalized learning experiences for students, ultimately fostering a deeper appreciation and understanding of the subject.

The discussion centers on the implications of the findings and the potential benefits of digital technology in mathematics education. While the positive outcomes are promising, challenges such as access to technology, teacher training, and the need for ongoing support systems must be addressed. Additionally, discussions highlight the importance of balancing traditional teaching methods with digital tools to create a holistic and effective learning environment.

Conclusions and Suggestions:

In conclusion, the integration of digital technology in teaching mathematics has the potential to revolutionize education, making it more engaging and accessible. However, successful implementation requires careful consideration of the specific needs of students and educators. Future research should focus on refining digital tools, expanding accessibility, and providing continuous professional development for teachers to ensure sustainable and effective integration.

- Investigate the long-term impact of digital technology on students' mathematical proficiency.

- Explore the effectiveness of specific digital tools in different educational contexts.

- Examine the role of gamification and virtual reality in enhancing mathematics education.

- Investigate strategies for addressing the digital divide and ensuring equitable access to technology in educational settings.

References:

1. Rustamov Kh.Sh. The use of didactic-software crosswords in mathematics lessons//European Journal of Research and Reflection in Educational Sciences. Great Britain, 2020. Vol. 8. № 3, 2020. Part II. ISSN 2056-5852. P. 87-93.
2. Arnold V.I. Science of mathematics and the art of mathematicians // Moscow State University. M.V. Lomonosov. Moscow, 2008. C. 4.
3. Verbitsky A.A. Digital education: problems, risks and prospects / A.A. Verbitsky // Electronic scientific journal "Homo Cyberus", 2019. № 1 (6).
4. Dvoryatkina S.N. On the possibility and necessity of the formation of digital competencies by means of mathematics // Bulletin of the I.A. Bunin. Yelets, 2018. 39. S. 54 58