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USING GAMIFICATION AND INTERACTIVE GAMES IN TEACHING MATHEMATICAL CREATIVITY

Otajonova Sitorabonu Shuxratovna
Asia International University
Trainee Teacher, Department of General Technical Sciences
sitorabonu_shuxratovna@mail.ru

ANNOTATION: This article discusses modern methods of teaching mathematics, their practical implementation, and the ways to provide students with solid knowledge while shaping their worldview. It also highlights how mathematics education can foster values such as respect, self-worth, and diligence. The focus is on how gamification and interactive games can be used as effective tools to develop mathematical creativity and enhance student engagement in the learning process.
Keywords: gamification, interactive games, mathematical creativity, educational innovations, pedagogy.

INTRODUCTION

The modern education system requires enriching traditional teaching methods with innovative pedagogical technologies. Particularly in mathematics education, developing creativity and advanced thinking has become an urgent issue. One of the most effective methods to enhance student engagement, motivation, and mathematical reasoning is through the use of gamification and interactive games.

Mathematics education should not only deliver knowledge but also be engaging, motivating, and innovative. Gamification and interactive games play an important role in revitalizing the teaching process. Gamification methods can make learning mathematics more interesting and accessible. For mathematics teachers, these methods not only increase student engagement but also develop their creativity and problem-solving abilities.

This article explores the effectiveness of using gamification and interactive games in fostering mathematical creativity among learners.

Gamification is the integration of game elements and mechanics into the educational process. Games enhance motivation, interest, and competition, thereby capturing students' attention. Interactive games require students to participate actively in real-time activities, transforming them from passive observers into creative and systematic thinkers.

The application of gamification and interactive games in mathematics education provides the following opportunities. Learning topics interactively, which connects theoretical knowledge with practice. Learning from and correcting mistakes to acquire new knowledge. Enhancing motivation for achievement, thereby fostering independent thinking and problem-solving skills.

The role of gamification and interactive games in developing mathematical creativity

The Role of Motivation in Mathematical Achievement:

Games and gamification provide high levels of motivation in learning mathematics. Research shows that incorporating games encourages students to complete mathematical tasks independently, strengthens their sense of achievement, and promotes mathematical creativity. Through math-based games, learners gain opportunities to challenge themselves, explore new approaches, and express their ideas in creative ways.

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Learning from Mistakes and Fostering Innovative Thinking:
Through gamification and interactive games, students review and correct their mistakes while developing innovative thinking. Games often include various levels of difficulty, requiring students to devise new approaches to progress. This process enhances creativity as learners explore unconventional ways of thinking.
Collaborative Learning Through Games:
Interactive games effectively promote collaboration among students. In gamified settings, learners compete or cooperate as a team, sharing their knowledge and exchanging ideas. This teamwork cultivates creative thinking and strengthens problem-solving abilities through mutual learning.

Methods of using gamification and interactive games

Mathematical Quizzes and Tests: Game-based quizzes help students master different areas of mathematics. These quizzes engage learners while allowing them to assess their own progress. Interactive tests also teach time management and develop mathematical reasoning.
Virtual Simulations and Interactive Programs: Using digital simulations to teach mathematical concepts allows students to visualize mathematical processes in practice. For example, studying geometry or algebra through interactive software enables learners to comprehend abstract theories visually.
Mathematical Stories and Game-Based Problems: Presenting mathematical problems in the form of stories or contextual situations encourages creative engagement. For instance, solving story-based problems helps learners relate mathematics to real-life contexts, making learning more meaningful and enjoyable.

RESULTS

Integrating gamification and interactive games into the learning process has significantly increased students' interest in mathematics. Game-based activities not only helped students acquire necessary knowledge but also improved their problem-solving, quick-thinking, and creative skills. For example, games such as *"Mathematical Journey"* enabled students to learn complex mathematical topics in an easy and entertaining manner while promoting teamwork, idea-sharing, and mutual support. As a result, their participation and creative problem-solving abilities have notably improved.

CONCLUSION

Gamification and interactive games play a crucial role in developing mathematical creativity. Presenting complex mathematical problems in a game format increases student motivation, fosters innovative thinking, and promotes creativity. These approaches not only enhance students' interest in mathematics but also teach them to think independently and systematically.
The effective use of gamification and interactive games can elevate mathematics education to a new level. Gamified learning not only boosts students' engagement but also enables them to demonstrate and develop their abilities. Teachers can make their lessons more dynamic and interactive through these methods, encouraging students to be active learners, explorers, and innovators.

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