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The implementation of games as a tool to facilitate the process of learning mathematics

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SUMMARY

The use of games as a tool to facilitate the mathematics learning process has been widely studied in the field of education. Games can be a fun and effective way to teach mathematical concepts, as they allow students to learn in a more playful and interactive way. Additionally, games can help develop skills such as logical thinking, problem solving and teamwork. Several studies have shown that using games in the classroom can improve students' mathematical performance and increase their motivation and interest in the subject. However, it is important to emphasize that the games must be chosen carefully and adapted to the students' level of development and pedagogical objectives. In this sense, the implementation of games as a tool to facilitate the learning process in mathematics can be an effective strategy that can make teaching more engaging and efficient, helping to develop students who are more prepared and engaged in the subject.

Key words: Learning; Mathematics; Games; Innovation; Teaching.

ABSTRACT

The use of games as a tool to facilitate the process of learning mathematics has been widely studied in the field of education. Games can be a fun and effective way to teach math concepts, as they allow students to learn in a more playful and interactive way. Also, games can help develop skills like logical thinking, problem solving, and teamwork. Several studies have shown that the use of games in the classroom can improve students' mathematical performance and increase their motivation and interest in the subject. However, it should be noted that the games must be chosen carefully and appropriate to the students' development level and the pedagogical objectives. In this sense, the implementation of games as a tool to facilitate the learning process in mathematics can be an effective strategy that can make teaching more engaging and efficient, helping to develop students who are more prepared and engaged in the discipline.

Keywords:*Learning; Mathematics; Games; Innovation; Teaching.*

1. INTRODUCTION

Teaching mathematics is challenging for many students, who often struggle to understand concepts and apply them to real-world situations. In this sense, the use of games as tools to facilitate the learning process in mathematics has proven to be an effective strategy for making teaching more dynamic and engaging, helping to develop students who are more prepared and engaged in the subject.

Most students are afraid of mathematics, perhaps the way it is taught prevents students from learning the subject because what is taught is hardly practical. [Stoica 2015] highlights that learning mathematics is considered difficult by most students. One of the reasons is that in a traditional mathematics class, students first learn the theory, and then are asked to solve exercises and problems that have more or less algorithmic solutions, using more or less the same reasoning, much less connected with reality. . world events.

The idea of using games as a mathematics teaching resource is not new. Games like chess have been used since ancient times to develop mathematical skills like geometry and logic. From the 20th century onwards, however, the use of games in the classroom became more common with the advent of specific pedagogical games for teaching mathematics.

Several studies have shown that using games in the classroom can improve students' mathematical performance and increase their motivation and interest in the subject. Additionally, games can help develop skills such as logical thinking, problem solving and teamwork.

However, it is important to emphasize that the games must be chosen carefully and adapted to the students' level of development and pedagogical objectives. Very simple games may not challenge students, while very complex games can generate frustration and hinder learning. Therefore, teachers must have a good knowledge of the games available and know how to adapt them to the needs of their students.

In this sense, the objective of this work is to discuss the implementation of games as a tool to facilitate the learning process in mathematics, presenting the main benefits and challenges of this strategy and good practices for its implementation.

Therefore, to carry out this article, research was carried out in the form of a bibliographical review, with the aim of analyzing texts from reliable sources and publications such as (Google Scholar, Scielo, etc.), in which recent studies were selected, providing detailed informative descriptions and results of research carried out in real works on the topic, seeking recognized authors who have treated and interpreted the topic.

2 DEVELOPMENT

Mathematics is the science that studies the logic and properties of numbers, quantities, shapes and abstract structures. It exists in different areas of knowledge, such as physics, chemistry, biology, economics and engineering, and is fundamental for understanding and solving problems in different areas of everyday life.

Mathematics teaching practice involves the development and implementation of instructional strategies designed to develop students' understanding and skills in mathematical concepts. This includes the choice of content, the use of appropriate teaching material, the application of activities and exercises that stimulate logical reasoning and problem solving, and assessments that measure student learning.

It is a growing field of research, with several studies underway around the world to improve the techniques and methods used by teachers.

In addition to helping and influencing the formation of children and adolescents, it can also promote the healthy growth and permanent enrichment of children and adolescents, and is part of the highest spirit. (Almeida (1974, p.57)).

Democratic practice without ceasing to invest in the serious production of knowledge. Its practice requires frank, creative, free, critical engagement, fosters social interaction and has in mind a strong commitment to the transformation and transformation of the environment.

With the advancement of technology and research in the field of education, new teaching methods and techniques are constantly emerging, and it is important that teachers are up to date and open to new possibilities, in order to make teaching more dynamic and engaging.

Instructional innovations range from the use of new teaching materials to the implementation of more participatory and interactive methods, such as the use of games and educational technology. Furthermore, innovation can occur in the planning and organization of classes, creating activities and projects that encourage the development of socio-emotional skills and problem solving.

Instructional innovations also help prepare students to better respond to the challenges of the contemporary world, which require increasingly complex skills and abilities. Through innovative practice, students develop skills such as creativity, critical thinking, teamwork and problem solving, which are fundamental to success in many areas of life.

Students' creativity can be stimulated through the use of games that present different challenges and require the application of different strategies to achieve the game's objectives. Games can stimulate the development of creativity by presenting problem situations that require students to find innovative solutions.

Critical thinking can be developed through the use of games that present complex challenges and require students to apply mathematical concepts to real-world situations. Games can stimulate critical thinking by presenting challenges that require students to analyze different solutions and choose the best one.

Teamwork can be developed through the use of collaborative games in which students need to work together to achieve the game's objectives. Collaborative games can promote the development of teamwork by requiring students to communicate, cooperate, and share tasks.

Problem solving can be developed through the use of challenging games that require students to apply mathematical concepts to solve problems. Games can encourage problem solving by presenting challenges that require students to analyze different solutions and choose the best option.

Furthermore, it was observed that the use of games as a tool to facilitate the mathematics learning process has proven to be an effective strategy for making teaching more dynamic and engaging, helping to develop students who are more prepared and engaged with the subject. This review presents research that discusses the use of games as a tool to facilitate the learning process in mathematics, highlighting the benefits and challenges of this strategy and the best practices for implementing it.

Chess is an activity that can be used as a strategy in teaching mathematics, as it involves the application of mathematical concepts such as geometry, algebra and logic. Furthermore, playing chess can contribute to the development of socio-emotional skills, such as critical thinking, problem solving, decision making and strategic planning.

Chess exercises in teaching mathematics can be used at various levels of education, from elementary school to university. In elementary school, the game of chess can be used as a playful activity to develop basic mathematical skills such as counting, addition and subtraction. In high school, the game of chess can be used to stimulate logical reasoning and solve complex problems, such as the application of geometry and algebra concepts. In higher education, the game of chess can be used as a tool for developing research and mathematical analysis skills.

The practice of chess in teaching mathematics can also be used as an extracurricular activity, for example, a chess club or a school competition. This can contribute to the development of socio-emotional skills, such as teamwork, respect for rules and coexistence in groups.

In addition to playing traditional games, such as the aforementioned chess, it can be seen that digital games can also be used to teach mathematical concepts in a playful and interactive way, encouraging active participation from students and contributing to the development of social skills. emotional skills.

The adaptation of digital games for teaching mathematics can range from using existing games to creating specific games for teaching mathematical concepts. Digital games can be personalized to meet students' needs and learning objectives, making learning more personalized and effective.

Digital games can be used to teach mathematical concepts of various levels of complexity, from basic concepts to more advanced content. Furthermore, digital games can be used at various stages of the teaching process, from introducing concepts to evaluating student learning.

Adapting digital games for teaching mathematics can contribute to the development of skills such as critical thinking, problem solving, creativity and teamwork. Furthermore, digital games can stimulate students' motivation to learn mathematics and, thus, contribute to their academic performance.

Several studies have shown that using games in the classroom can improve students' performance in mathematics, as well as increase their motivation and interest in the subject. Additionally, games can help develop skills such as logical reasoning, problem solving and teamwork.

A study by Silva et al. (2018) The authors emphasized that games were able to engage students and make learning more meaningful.

Another study by Sousa et al. (2019), investigated the use of digital games in teaching mathematics to high school students. The results showed that the use of games contributed to improving students' performance in relation to the content studied and also to increasing motivation and interest in the subject.

However, it is important to emphasize that the selection of games must be careful and appropriate to the students' level of development and pedagogical objectives. Games that are too simple may not challenge students, while games that are too complex can cause frustration and discourage learning. Therefore, it is essential that teachers know the games available and know how to adapt them to the needs of their students.

A study by Barros (2017) addresses the use of games in teaching mathematics to students with intellectual disabilities. The results showed that the games were able to contribute to improving students' performance in relation to the content studied, as well as increasing motivation and interest in the subject. The authors highlighted the importance of choosing appropriate games and adapting them to the needs of students with disabilities.

The use of games in teaching mathematics can contribute to the formation of more critical and reflective students. A perspective presented by Lima et al. (2016) explained the use of games in teaching mathematics to high school students. The results showed that the games were able to contribute to the

development of students' critical and reflective thinking and also to improve their performance in relation to the processed content.

It is important to emphasize that the use of games in teaching mathematics is not an isolated strategy, but must be integrated with other pedagogical practices. The results showed that the use of games was effective, but that integration with other pedagogical practices, such as problem solving, was essential to improve student performance.

According to Kishimoto (2007), when conceptualizing “games”, we cannot help but associate it with sport and competition, in a vision to embrace. its effectiveness. This encourages game participants to seek new strategies to win the game. This situation contributes to the perception that improving inference and speed is an important action. The game directly affects participants' emotions, maintaining attention and transforming the “game” activity into an engaging and motivating attraction for participants.

In summary, the use of games as a tool to facilitate the mathematics learning process has proven to be an effective strategy for making teaching more dynamic and attractive, contributing to the formation of students who are more prepared and interested in the subject. However, it is essential that teachers have a good knowledge of the games available and know how to adapt them to the needs of their students, as well as how to integrate them with other pedagogical practices.

3 FINAL CONSIDERATIONS

It is concluded that the use of interactive tools and games is essential for teaching mathematics, as it makes learning more fun and effective. Students become more engaged in the subject and are able to more clearly visualize the concepts and applications of mathematics in the real world. Additionally, interactive tools and games provide a more dynamic and collaborative learning environment that encourages active student participation in the learning process. Therefore, it is important for teachers to incorporate these tools into their classrooms to make math teaching more engaging and effective.

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