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ATIVIDADE LÚDICA PARA APRENDIZAGEM DE ÁLGEBRA: USO DO DOMINÓ DAS EQUAÇÕES COM ALUNOS DO 1º ANO DO ENSINO MÉDIO

ACTIVIDAD LÚDICA PARA APRENDER ÁLGEBRA USANDO ECUACIONES DE DOMINÓ CON ALUMNOS DE 1º DE SECUNDARIA

PLAYFUL ACTIVITY FOR LEARNING ALGEBRA USING DOMINO EQUATIONS WITH 1st YEAR HIGH SCHOOL STUDENTS

Presentation: Poster

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INTRODUCTION

Mathematics presents its own language that must be interpreted throughout school and initiate a connection with the student's social and professional life. In relation to this language, in the 7th year of Elementary School, the use of algebra begins, with the union of numerals and letters, requiring greater understanding and reasoning from students. In most Brazilian educational institutions, this content begins with decontextualization, absence of problem situations and mechanical fixing activities, preventing understanding, application and relationship with other subject content, generating a lack of interest and harming student learning. According to Silva (2007), the difficulty of teaching algebra begins with the acceptance of letters corresponding to quantities, the formal language of the textbook with concepts devoid of meaning for the student.

The 1st degree equation is a difficulty encountered by students when studying algebra in elementary school. This concept is essential for knowledge of other content studied in Mathematics throughout high school and university. In many situations, the calculations carried out are devoid of meaning (Oliveira, 2016).

Games used in algebra classes can help remove obstacles to learning this content, arouse student interest and contribute to more attractive and meaningful learning. In the educational context, games are important logical reasoning strategies that help students solve problems, motivate

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creative potential and develop logical reasoning (Rosada, 2013).

Given the context, the research aimed to use and evaluate the Domino game of 1st degree equations to assist the teaching-learning process in the classroom.

THEORETICAL FOUNDATION

Algebra is a mathematical content that requires an intense level of abstraction, due to numerical values expressed in literal form, that is, the use of letters to express numerical values, which may not present meaning for the majority of students, a situation that can cause a considerable drop in learning, leading to a misunderstanding of school mathematical content (Pereira; Sandmann, 2017). In situations involving operations related to algebra and the 1st degree equation, the student's learning difficulties are accentuated and make many students feel a certain blockage, as the way in which algebra is taught to students, most of the time, calculations prevail with a lack of meaning, a decontextualized manner, generating students' lack of interest in the content taught (Oliveira, 2016).

The game can be an alternative method in the process of teaching and learning Mathematics that can stimulate curiosity and arouse the student's interest (Souza and Salvador, 2019). The use of games in the classroom is seen as an important pedagogical resource in learning Mathematics, as it stimulates students' interest, making learning more attractive and meaningful. Classes with game activities make the teaching-learning process more dynamic, enabling student motivation and pleasure (Melo; Lima, 2021). Through games, it is possible to capture content in a dynamic way, reducing the difficulties faced by students who have limitations in learning Mathematics and facilitating socialization between the students themselves as they interact during the games. (Santos et al., 2021). The use of games in the classroom can be an effective resource used by the teacher to motivate students in learning algebra content. (Massa; Ribas, 2016).

METHODOLOGY

The study was developed quantitatively (Severino, 2016), aiming to evaluate a game (figure 1) developed to assist the learning of 1st degree equations. The game was applied in the

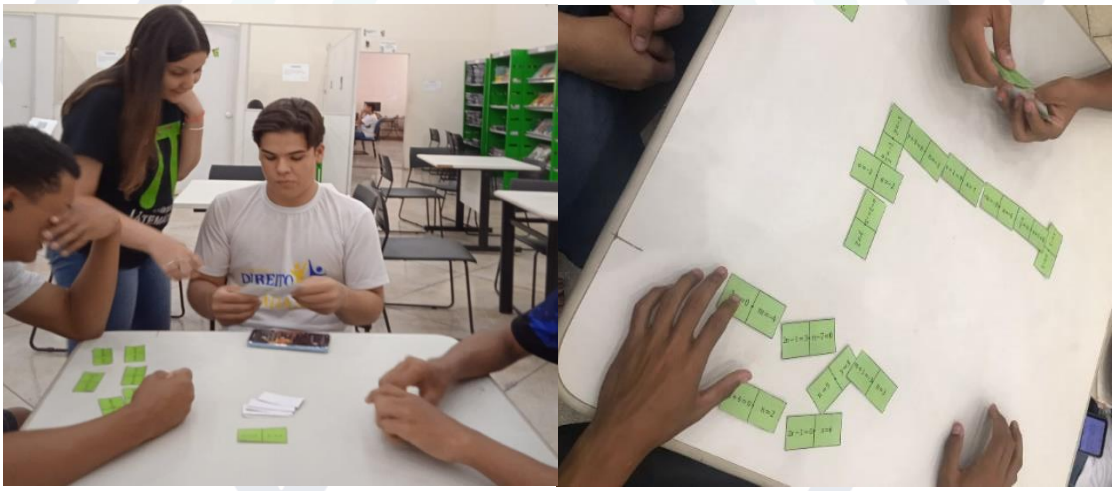
Figure 1: Domino of 1st degree equations

$\frac{a}{3}=-2$	$x+1=0$	$2x-1=0$	$x=6$	$\frac{a}{2}=-1$	$y=-3$	$a-3=-5$	$y=2$
$m=3$	$5-a=-2$	$n+1=8$	$m=10$	$\frac{x}{3}-2=0$	$a=7$	$a=-2$	$a=-2$
$-x-1=0$	$-y-2=-5$	$-x+2=-5$	$x=\frac{1}{2}$	$y+3=0$	$n=-1$	$3a+2=5$	$m=-4$
$m+1=-3$	$n=3$	$\frac{m}{3}=1$	$a=0$	$m-3=7$	$a=1$	$-3x=-21$	$a=-6$
$\frac{n}{3}-\frac{1}{3}=\frac{4}{3}$	$y=-3$	$y+5=2$	$n=7$	$n=7$	$-2n+2=0$	$x=-1$	$x=-1$
$2n-1=3$	$n-7=0$	$3a=0$	$m=-4$	$n+1=0$	$x=7$	$n=5$	$y=3$
$\frac{a}{3}-\frac{5}{3}=\frac{1}{3}$	$x=7$	$a=6$	$2-y=0$	$n=1$	$n+2=5$	$m+4=0$	$n=2$

Source: UNESP (2013).

month of August 2023, in a class, with 40 students, from the 1st year of High School, in the morning, lasting 50 minutes, in a public school located in the city of Paraíso do Tocantins, State of Tocantins. 10 (ten) groups were formed (4 students per group) for presentation (figures 2) and explanation of the rules of the game.

Figure 2: Use of domino in 1st degree equations by students



Source: Authors (2023).

After defining the strategy to start the game (which piece should start the game), the game started with a group of 4 (four) students receiving 7 (seven) pieces each. The next participant to play was the one to the right of the game starter. The winner will be the member of the group who first manages to fit all their pieces into the domino displayed on the table. If there were no play options for any of the participants (closure of the game), the winner will be

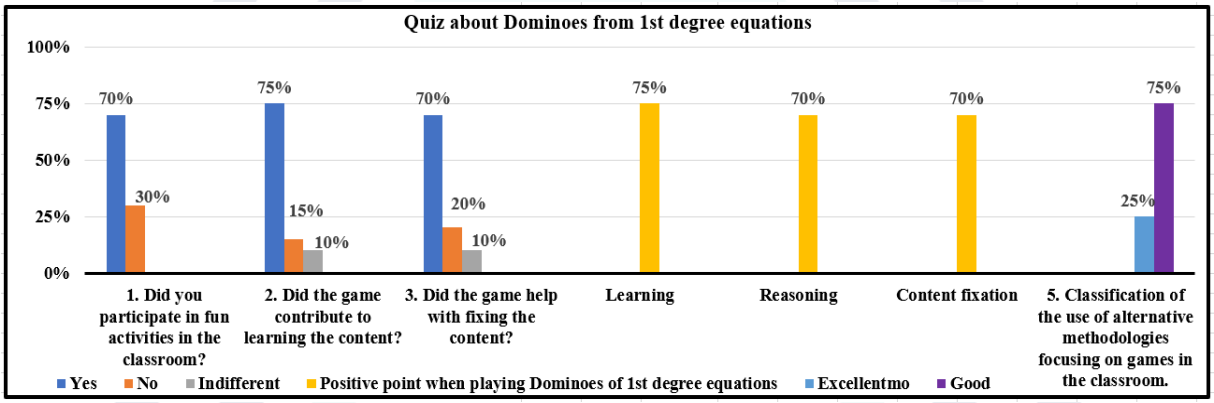
the one with the lowest number of pieces in hand, if the tie persists, the winner will be the one with the piece with the lowest value.

After using the game, students were invited to answer a questionnaire with the following 3 (three) closed and 2 (two) open questions: 1. Did you participate in a gaming activity in the classroom? 2. Did the game contribute to learning the content? 3. Did the game help you retain the content? 4. Positive point when playing Domino of 1st degree equations? 5. Classification of the use of alternative methodologies focusing on games in the classroom.

RESULTS AND DISCUSSION

Graph 01 reports the answers to the evaluation questionnaire applied to 1st year students on the use of the Domino game of 1st degree equation operations.

Graph 1: Questionnaire about the game Domino of 1st degree equations.



Source: Authors (2023)

The graph's diagnosis shows that 70% of those interviewed participated in games in the classroom. Regarding the contribution of the game to learning, 75% stated that there was a contribution. Oliveira (2016), using domino to teach elementary school equations, reports that the game contributed to reinforcing learning.

When asked about the help in fixing the content using Domino, 70% agreed, declaring that there was fixation through the use of the game. Students highlighted learning (75%), reasoning (70%) and content retention (70%) as positive points. The Domino of the 1st equations were classified as good by 75% of the students. Silva (2020b), using the algebraic Domino game with Basic Education students, obtained an increase in student learning and interaction between students and teacher. Mendes; Sousa, (2020), Santana, (2020) using domino Mathematics classes, highlighted more meaningful learning, interaction, sharing of

information between students, quick reasoning in solving questions involving the four operations and success in assimilating the content studied in classroom. Silva and Ovigli (2018) highlight the need for teachers to prepare for unexpected results caused by students' euphoria and excitement when using games in the classroom.

The analysis of the application of the Domino game of 1st degree equations shows that the playful approach carried out presented values equal to or greater than 70% in all questions questioned, showing good acceptance and contributing to significant learning about the algebra content studied.

CONCLUSIONS

The Domino game of 1st grade equations provided a situation of socialization in a relaxed and interactive environment, generating contextualized learning that was closer to the student's daily life. Therefore, the use of playful activity was an auxiliary strategy of great relevance for learning and maintaining the study of algebra and basic mathematical operations, supporting the teacher to contextualize the content and motivate students.

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