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BARALHO DAS VIDRARIAS: UMA PROPOSTA LÚDICA PARA O ENSINO DE QUÍMICA EXPERIMENTAL

CUBIERTA DE CRISTALERÍA: UNA PROPUESTA LÚDICA PARA LA ENSEÑANZA DE LA QUÍMICA EXPERIMENTAL

GLASSWARE DECK: A PLAYFUL PROPOSAL FOR TEACHING EXPERIMENTAL CHEMISTRY

Presentation: Poster

Miriam Oliveira da Silva[1]; Nelson Pereira Carvalho[2]; Ronilson Mendes Cruz[3]; Sérgio Luis Melo Viroli[4]

INTRODUCTION

For a better understanding of the Chemistry discipline, it is essential that the student studies theory in the classroom and participates in experimental activities in the laboratory. Experimental classes provide greater scientific insight into the changes that occur in matter. Despite this, many students experience difficulties in carrying out experiments due to their lack of knowledge of the equipment and glass utensils used in experimental activities.

Therefore, it is necessary to develop methodologies that stimulate and promote student learning. Games are playful activities that can contribute to the development of the contents of the Chemistry discipline in a simple way through creative classes, close to the student's daily life, with engaging language, establishing the learning of various skills and promoting the construction of cognitive, physical and of the student. According to Santana (2008), playful activities are instruments that can help teachers disseminate knowledge in the classroom. When these activities are perfectly developed and applied, they produce a dialogue of knowledge and personal improvement. Didactic recreational activities must be used with auxiliary teaching strategies to create an atmosphere that favors the recall of previously taught content.

In this conception, this research work aimed to verify the playful state of the proposal for a card game entitled Deck of Glassware, developed to assist students in the 1st period of the Chemistry Degree in the identification, usability and applicability of basic glassware used in

1 Degree in Chemistry, Federal Institute of Tocantins, miriam.estudante@estudante.ifto.edu.br
2 Degree in Chemistry, Federal Institute of Tocantins, nelson.carvalho@estudante.ifto.edu.br
3 Degree in Chemistry Federal Institute of Tocantins, ronilson.cruz3@estudante.ifto.edu.br
4 Master, Federal Institute of Tocantins, viroli@ifto.edu.br

the laboratory during experimental classes.

THEORETICAL FOUNDATION

Some content taught in the Chemistry discipline is abstract and not very understandable, requiring pedagogical strategies that enable the continuous development of Chemistry content in a simple way through creative classes, different from traditional class models (Gonçalves et al. 2019; Oliveira et al. 2019; Ferreira et al, 2019). Experimental activities in the laboratory require the student to have prior knowledge of the name, use and purpose of each glassware and equipment used in the laboratory. Due to the lack of knowledge of the name and usability of laboratory utensils in experimental classes, difficulties were observed in identifying and handling basic glassware in the laboratory (Sousa et al. 2017).

Games are examples of playful activities that contribute to teaching and learning, promoting individual knowledge and contributing to pedagogical practice inside or outside the classroom. They also enable the development of the contents of the Chemistry discipline in a simple way through creative classes related to the student's daily life, using clear, engaging language and establishing understanding of various skills, avoiding the excessive use of expository classes (Gonçalves et al. 2019; Guizzo et al., 2019; Leão et al., 2019; Oliveira et al. 2019).

The use of games in teaching Chemistry has proven to be a very suitable alternative as it is a means of motivation and improves the teaching-learning relationship, providing an engaging environment, with the acquisition of various skills, becoming a means of enhancing performance. of students in content with learning difficulties (Carbo et al., 2019; Leão et al, 2019). The didactic game can be a strategy for developing the student's critical capacity, where they are encouraged to question, research and search for information, make decisions and create hypotheses (Wartha; Kiouranis; Vieira, 2018).

METHODOLOGY

The research was carried out in an exploratory, descriptive way with a quantitative approach (GIL, 2008), with the objective of evaluating a game entitled “Deck of Glassware” developed to assist the knowledge and fixation of the content exposed by the teacher in terms

of recognition, usability and applicability. glassware and equipment used in experimental activities.

The action took place, in the 1st semester of 2023, during the Experimental Chemistry I discipline, involving 20 students from the 1st period of the Chemistry Degree Course at the Federal Institute of Education, Science and Technology of Tocantins – IFTO campus Paraíso do Tocantins.

The game was made with fifty-two (52) prints of names, usability and photos of glass and porcelain utensils, with rectangular cutouts (6 cm x 9 cm) of cardboard paper (figure 1) and with the participation of two to four participants, who initially receive 9 (nine) cards.

Figure 1: Cards from the Glassworks card game

Source: Authors (2023)

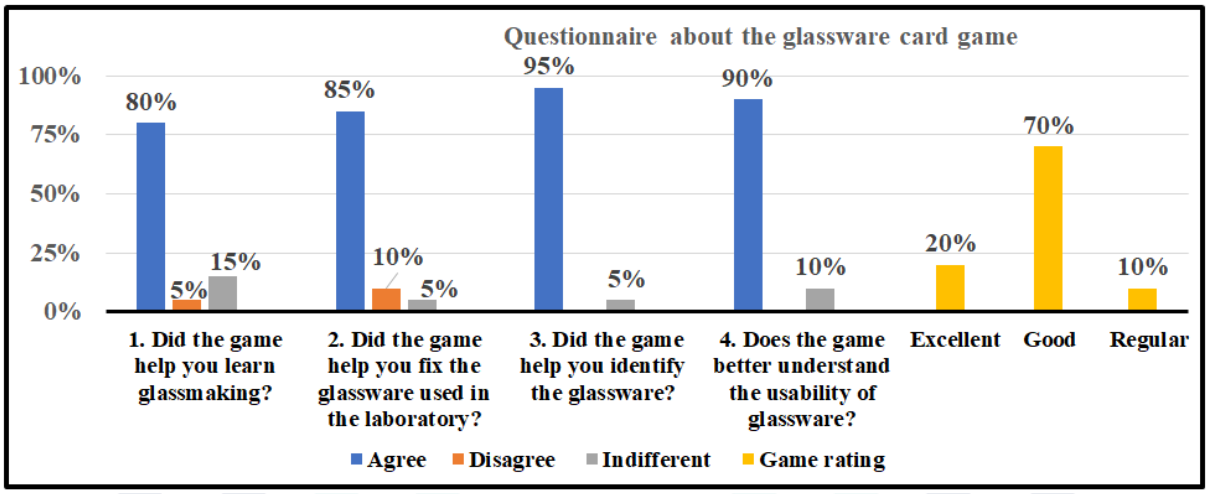
Surplus cards are placed in a search pile. A card is removed from the pile and each player discards a card. After drawing lots to see who would start, the game started clockwise (from left to right), where the objective of the game is to form a set of three identical or different cards (image, name and usability of the utensils). If a player has no cards to discard, they must search the pile until they find a card to discard. The player who runs out of cards and has the most trips wins the game.

After the playful activity, an evaluative questionnaire was administered with four (4) closed questions and 1 (one) open one: 1. Did the game favor learning the content? 2. Did the game help you retain the content? 3. Did the game help you identify the cups? 4. Does the game better understand the usability of cups? 5. How do you classify the game?

RESULTS AND DISCUSSION

The results of the responses to the questionnaire applied to evaluate the playful activity (graph 1) demonstrated that the playful activity presented a satisfactory index in the students' evaluation, providing the consolidation of content about glassware, expanding knowledge of concepts little covered in the classroom.

Graph 1. Questionnaire



Source: Authors (2023)

According to the results shown in graph 1, it was possible to observe that 80% of students stated that the game contributed to learning, 5% disagreed and 15% were indifferent to the statement. Regarding content fixation, 85% agreed that the game fixed the content, 10% disagreed and 5% were indifferent. Regarding the identification of glassware, 95% stated that it facilitated the identification of glassware, 5% were indifferent. Due to the contact cards with the appropriate names and functions, 90% claimed that the game improved their understanding of the usability of glassware and 10% were indifferent. Students rated the game as good (70%), excellent (20%) and regular (10%). All evaluated items presented values equal to or greater than 70% approval, demonstrating the game's contribution to alternative learning about the glassware used in the laboratory.

Sousa et al. (2017) after applying an activity related to the knowledge and function of basic laboratory equipment, it was observed that 70% of students did not get the correct name of the basic laboratory glassware and 65% were unaware of the use of the glassware. Gomes Marin et. al. (2018), also evaluating a game applied to students in a public school in Amazonas about the names and functions of glassware, they observed that 75% stated that the game helped

them understand the content of laboratory glassware, 83% agreed that it facilitated the identification of glassware and 86 % stated that games can be an alternative teaching method. Lima et al. (2013) also applying a game about learning about glassware to 25 high school students in a public school in the city of Natal-RN, observing that the game aroused the students' curiosity about the names and functions of each laboratory glassware.

CONCLUSIONS

The Deck of Glassware game evaluated by students from the 1st Period of the Chemistry Degree Course presented satisfactory results, where all evaluated items presented values equal to or greater than 70% approval. The game produced and applied helped with retention, contributing to the learning of content about recognition and function of glassware used in experimental Chemistry activities, providing a pleasant and fun learning environment.

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