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GAMEFICTION IN THE TEACHING OF MORPHOLOGY: A MINI REVIEW

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ABSTRACT

In recent years, many teachers have used gamification as a teaching strategy, but there has been a shortage of such studies in Brazil. An intense debate has arisen among teachers about the use of games in teaching, since the generated competition is not favored by some teachers resistant to new teaching methodologies. The objective of this research was to carry out an integrative review on gamification with the morphology teaching tool. A descriptive study of integrative review was carried out. The first phase of the study consisted of an integrative review of national and international scientific literature on gamification in journals indexed in the Virtual Health Library and Scielo, Science Direct and Google Scholar from health and education descriptors. To select the sample, three steps were performed. Inclusion / exclusion criteria were applied, resulting in the final sample of nine articles. We searched for texts published in Portuguese, English and Spanish on gamification and morphology, between 2000 and 2020, that addressed the concept of gamification in the teaching of morphology. The main results of the review demonstrate the use of Kahoot, IClickers as main strategies and teaching. In addition, some articles demonstrate the relative impact of iClickers and the gamification tool in teaching anatomy, as well as the effect of using cell phones and games on anatomy learning. It is concluded that there is a timid production on the teaching of gamification and morphology, demonstrating the need to elaborate educational policies to introduce methodology as a tool for teaching work and to improve the teaching and learning process.

INTRODUCTION

Gamification is increasingly becoming a relevant aspect of any area of education (KLOCK et al., 2020). Gamification is increasingly used in learning environments as a way to increase student motivation and consequent learning outcomes (LEGAKI et al., 2020). However, while research on the effectiveness of gamification in the context of education is growing, there are blind spots on what types of gamification may be suitable for different educational contexts. Nowadays, diversification in the teaching methodology diversification strategies is of vital importance to improve the teaching and learning process in order to enable the improvement of students' assimilative capacity.

Boundaries between games, recreational activities and scavenger hunts, such as the one applied in the study, are very permeable, allowing an interaction between them. However, gamification methods should be implemented that aim not only at a competitive process, but also at cooperation between members (PAIVA et al., 2019). In Brazil there is a scarcity of studies with gamification in the teaching of morphology. Thus demonstrating that there is a need to develop teacher training programs in order to train teachers to carry out this practice. Thus, this review will contribute to stimulate this practice among teachers of morphology. Based on these premises, the objective of this work was to carry out an integrative review on gamification in the teaching of morphology.

METHODOLOGY

A descriptive study of integrative literature review on gamification in the teaching of morphology was carried out, in order to identify articles that portray the use of gamification with teaching strategy. The integrative review consists of a methodological approach that has the general purpose of systematically gathering articles on a specific topic, in order to gather knowledge on a topic to be investigated. For the elaboration of this review we will follow the phases of its elaboration process, which are: (1) elaboration of the guiding question, already presented in the introduction of this article; (2) searching or sampling in the literature; (3) data collection; (4) critical analysis of the included studies; (5) discussion of results and (6) presentation of the integrative review. (SOUZA; SILVA; CARVALHO, 2010; ANDRADE et al., 2019).
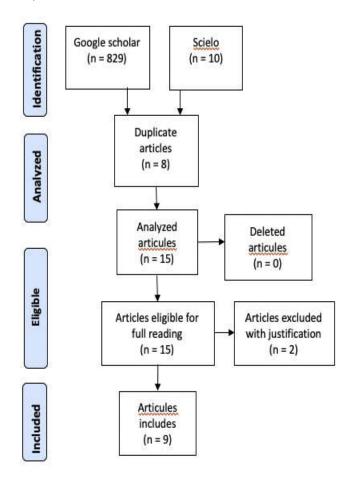

Figure 1. Prisma Flowdiagram.

In terms of literature search and data collection, we surveyed the articles investigated in the following databases: Science direct, Scielo, and Google Scholar. The following descriptors and their combinations in the Portuguese language were used to search for articles: "Gamification", "Morphology", "teaching", "learning" and "Education".

The inclusion criteria defined for the selection of articles were: (1) articles published in Portuguese; (2) Articles published in national and international journals; (3) articles related to the objective of this work; (4) article published in the period from 2010 to 2020. In figure 1, we can see the Prisma Flow diagram of the database search.

The Prisma Flow consists of a flow diagram that describes the systematic steps of the searches in the directories, highlighting the adoption of the selection criteria of the articles in their different phases. It maps the number of records identified, included or excluded, and the reasons for exclusions. In our research, we adopted as exclusion criteria: (1) Repeated records in different directories; (2) article that is incompatible with the objective of this research and (3) reading and qualitative analysis of the abstracts of the articles (Figure 1)

RESULT AND DISCUSSION

Table 1 shows the main results of the literature review on gamification and its peculiarities, where we can see that there are few studies conducted in Brazil. The use of gamification tools has increased steadily over the past 10 years. Gamification is part of active methodologies, which has already been shown to contribute significantly to the construction of knowledge (1). Every individual likes to play, has fun with competitiveness and, within teaching, this has been seen as an increase in engagement within the classroom (2). This teaching tool has been widely applied due to its efficiency when used in the classroom (3).

And this can be done both by standard applications developed by the university (3,4) and by already known applications like Kahoot! (5). All articles evaluated in this work demonstrated that the use of gamification has a positive impact on several aspects of students. One of the most discussed points is the student's motivation, which is high when using gamification as a teaching methodology (6,7). But, in addition, we can also see an improvement in students' academic performance (3), as well as evidence of short-term knowledge formation (8). Due to these findings, it can be considered that this methodology provides an incentive to significant learning more efficient when compared to the traditional model (1).

One point that should be mentioned is the increase in the interest that the student has in learning. Studies show that students feel more motivated and motivated to participate, students tend to miss classes less and feel more focused (6,9). In addition, students evaluate the platforms positively, realizing that these tools are intuitive and easy to use (4,9). However, there are still studies that demonstrate that it still needs to be improved, since in some of its applications it was difficult to include it correctly in the curriculum of the disciplines (2). Therefore, more studies should be developed to better implement it within the classrooms.

In research conducted in teaching English in Indonesia, researchers verified the effectiveness of the word wall in teaching. After the treatment, the students 'achievement from the pre-test to the post test has improved highly. It can be seen that, the improvement of their score from the pre-test till the post test. World wall has some advantages for the learning process, such as the colorful design of the word wall which could activate the student's thinking process and students will not be bored and passive in class because they will interact with the word wall. Based on the data above, the researcher concludes that word wall is effective to be used in teaching simple present tense. Teachers should explore more methods that could be used to teach.

Table 1. Analysis table of selected articles

AUTHOR (YEAR)	OUTPUT	MAIN RESULTS	CONCLUSION	JOURNAL	DATABASE
AKTEKIN *et al.* (2018).	Reveal the effect of using cell phones and games on anatomy learning.	Students were more attentive and participative, more focused and engaged within the classroom.	Kahoot !, as a closing activity, can be an alternative for long-term knowledge retention.	InternationalJournalofMorphology	Scielo
BAUMAN *et al.* (2018)	Using the Histology Card game! and assess short-term knowledge retention.	An important increase in the knowledge of histology was seen, proving the formation of short-term memory.	The methodology has a positive impact on the creation of short-term memory and can also present these same results with increased difficulty, even forming long-term memories.	Peer J Preprints	Google Scholar
TAT *et al.* (2018)	To evaluate the possible correlation between gamification and academic performance of medical students.	The students pointed out that the use of gamification motivated them to study the classes in advance. From the point of view of the tutors, some adjustments are still necessary for better application.	Gamification affects the learning process by motivating students. Studentstendtoperformbetter in assessments.	Medical and Dental Education	Google Scholar
YABUNO *et al.* (2019).	Determine the relative impact of iClickers and the Kahoot gamification tool in teaching anatomy.	A positive correlation was seen between students on iClickers and Kahoot with their exam performance.	Students found both tools fun and should be used more often. The results also suggest that these tools have a positive impact when used together.	Journal of the Human Anatomy and Physiology Society	Google Scholar
FELSZEGHY *et al.* (2019)	Investigate whether students scored better after using Kahoot.	Students performed better, were more motivated to learn and overcame difficulties that presented with the discipline of histology.	This study encourages the inclusion of this tool, as well as gamification in the curriculum, due to its positive impact on students and teaching.	BMC Medical Education	Google Scholar
MATOS *et al.* (2019)	Describe the design, development and evaluation of the educational game called LabMorfoQuiz.	In terms of usability, all items had a positive evaluation of the students, who found it easy to learn to play, the rules clear and quite understandable, attractive and consistent design, readable colors, images and fonts and understandable	The application was developed by students from dentistry and medicine courses, who after taking the referred discipline showed interest in improving the application and positively evaluated the experience of acting as designers and developers, as well as the use of App Inventor, as it is an intuitive platform and does not require advanced programming knowledge.	Revista Novas Tecnologias na Educação	Google Scholar
MARCUZZO *et al.* (2019)	Implement didactic strategies that motivated learning in the discipline.	Regarding the use of the implementation of the varied didactic resources, it was observed a more active behavior of the students in the classroom. There is a perception of a higher level of attention, as well as a more active and motivated posture during class.	The adoption of diversified teaching strategies fulfilled its pedagogical objective, as well as fostering the motivation of students of the Nursing course to study Embryology.	Revista Internacional de Educação Superior	Google Scholar
MARANHÃO e REIS (2019)	Promote interactivity and collaborative learning about content.	They pointed out that the active tools in the classroom facilitated motivation and learning in the face of the different, playful, thought-provoking and attractive, immediate response, flexible thinking, the development of logical reasoning and the focus of attention and concentration.	Small actions, seeking to modernize some teaching methods and resources, can lead to much more meaningful and effective learning than when using the traditional teaching model.	Revista Brasileira de Educação e Saúde.	Google Scholar
De ALMEIDA MONTEIRO *et al.* (2020)	To report a learning experience associated with games and digital technologies in the content of basic disciplines in the areas of health	During the course of the activity, it became evident that students were engaged and focused on finding the right number of questions in the shortest possible time. There was no dispersion of attention and the performance of the class as a whole was positive, demonstrating the effectiveness of the applied learning method	The use of Kahoot in the teaching of histology proved to be promising as a motivating and effective tool in providing good results.	Revista de Saúde Digital e Tecnologias Educacionais	Google Scholar

Conclusion

As a component of the teaching and learning process, gamification, also called methodological strategies, is often at the center of the didactic, educational, political debate or even running through them in a systemic organizational perspective. Points to the need for new motivational learning paths. Thus, games are considered a modern model that, on the integrative plane of pedagogical planning, offers playful, fun and meaningful learning. Perhaps the educational system, especially the health area, is one of the areas in which there is the greatest expectation regarding the expansion of benefits obtained with gamification. Thus, this integrative review study proved diverse forms of learning, bringing student autonomy, favoring motivational aspects and providing a learning environment. It appears that there are few works with gamification in teaching anatomy in Brazil. Thus, one way to motivate the use as a teaching methodology is through the realization of teacher training workshops aimed at making board games and digital games. In addition, stimulate the production of games with the purpose of generating the production of patents since anatomy games are scarce in Brazil.

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