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Artigo Original

Use of Gamified Training for Capacity Building of Teachers in Distance Learning

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Abstract

In addition to the contemporary challenges related to student motivation and the adaptation of methodologies and strategies to the digital world, the recent pandemic of COVID-19 and its consequent social isolation brought new implications to education: the impossibility of face-to-face classes highlighted the need to rethink distance learning and digital teaching techniques. Within this context, a gamified training was developed, aiming at providing fast and accessible training in digital methods and languages for teachers nationwide. The focus of the present work was to expose, from the point of view of education professionals, the evaluation of the created tool. The data obtained from this research demonstrated a rate of retention of participants that is around twice the national average for distance learning in general. Additionally, the analysis of feedback from participants who concluded the training indicates a strong preference for gamified training over traditional online training, mainly due to factors such as entertainment, interactivity and innovation in learning techniques.

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1. Introduction

There are several works that suggest that current students are dispersed and unmotivated in relation to their studies (FRAGELLI, 2017). One of the great challenges in contemporary education, in this sense, has become to keep the student interested and motivated to participate in classes (GOMES; SILVA, 2018). One of the explanations proposed for such a phenomenon is that the applicable teaching methodologies have not necessarily followed the disruptive technological scenario in which students are immersed (BARRETO; BECKER; GHISLENI, 2019).

In distance learning, the scenario is even more challenging: according to Oliveira and Bittencourt (2020), the number of students enrolled in courses in this modality has been increasing. However, the number of graduates is not consistent with the number of new students, demonstrating a high dropout rate: while the graduates of face-to-face education represent 79% of enrollments, this number drops to only 21% in distance learning.

In the same vein, the census of the Brazilian Association for Distance Education - ABED - (2018) showed an exponential growth in the number of enrollments in the various modalities of distance courses, but also a high dropout rate, between 26% and 50%. According to the report, a possible explanation for this fact would be the greater offer and availability of online courses and the number of enrollments.

Simultaneously with this movement, which already exists, the advent of the Coronavirus Disease 2019 (COVID-19) pandemic in the first half of 2020 brought severe social implications to Brazil and the world. According to Viner et al. (2020), 107 countries - including Brazil - implemented the national closure of schools and other practices of social distance in education in March 2020. In the following month, around 138 countries accounted for school closure, affecting the education of about 80 % of children and adolescents in the world (VAN

LANCKER; PAROLIN, 2020).

In the national scenario, the adoption of social isolation measures has brought a new dimension to teaching. It is estimated that 52 million Brazilians have been affected, from kindergarten to higher education. With schools and universities closed for months at a time due to the pandemic, education faced - and faces - a crisis of continental proportions (PIERRO, 2020).

The impossibility of face-to-face classes highlighted the importance and the need to rethink distance learning and digital teaching techniques. According to Pierro (2020), the creation of online courses requires, in principle, multidisciplinary teams and months of preparation, with teachers working in Distance Education (DE) called specific training and instruction. In this sense, a survey conducted by Instituto Península (2020) revealed that 83% of teachers feel unprepared for remote education, while 88% of them said they had never taught a class in a virtual way before the pandemic.

According to Martins and Giraffa (2018), games have always been used as a teaching strategy at different levels. The current scenario, of the need for digitization and engagement, expands this perspective exponentially, with more comprehensive possibilities for interaction, collaboration, interdisciplinarity and knowledge construction.

Within this context, a gamified training ("game-course") was developed for teachers, with the aim of: (i) providing accessible training (throughout the Brazilian territory), for the rapid training of teachers in digital techniques and languages in the distance learning, in order to mitigate the insecurity and incipience of the participants - even if on time; (ii) putting these professionals in contact with the gamified process, in order to demonstrate its use and application; (iii) evaluate the gamified tool itself from the point of view of the teachers participating in this initiative.

The present work is mainly focused on showing, from the point of view of education professionals, the evaluation of the gamified tool (as discussed in item (iii), above). Within our new reality, brought about

by the COVID-19 pandemic, it is believed that such practice - of using gamification techniques - is of interest not only to schools and educators, but also to the academic community and public policy makers in education.

2. Theoretical Reference

2.1. About gamification

Gamification means the use of elements, components, dynamics and mechanics of games in contexts other than games - such as in health, education, sports, public policies and public awareness, information infrastructure, marketing and sales, employee training, among others. In this sense, different elements - or components - can be combined and applied in different ways, depending on the proposed objectives, with a direct impact on the user's perception and behavior (COSTA; MARCHIORI, 2015).

Specifically for issues related to education, Costa and Marchiori (2015) relate, based on several studies evaluated, as the main elements of games used, the score, ranking and achievements. Concomitantly, the mechanics most used for this modality would be cooperation and competition, challenges and evaluation (feedback), respectively. In relation to the dynamics, progression stands out - which includes the evolution in "phases", or the graduation of levels of difficulty, for example.

2.2. Use of gamification in teaching

In the educational scenario, the use of gamification techniques has been studied for just over a decade (FIGUEIREDO; JUNQUEIRA, 2015). Also, the use of game elements and mechanisms in several teaching-related processes is identified, among which are the content design and the students' evaluation (DICHEVA *et al.*, 2015).

Several authors and experts point out, as the main benefits of using gamification techniques, students' motivation and engagement. It is

also suggested that its use may contribute to the construction of knowledge in andragogy processes, including collaborative and cooperative participation, immersion elements and aesthetics as determining factors of active learning (FADEL *et al*., 2014).

The literature shows that the technique has shown effectiveness, especially in distance learning (BISSOLOTTI; NOGUEIRA; PEREIRA, 2014), and that it has gained visibility due to its potential to establish meaningful experiences in contexts of everyday life (FARDO, 2013; GOMES; SILVA, 2018). Additionally, the following points are mentioned as positive aspects of the use of gamification: (i) autonomy; (ii) the use of narrative - also known as storytelling -; (iii) the possibility of providing immediate and individual feedback (ARAUJO; CARVALHO, 2018); (iv) the possibility of approaching the content in a challenge format; (v) the abstraction of reality; (vi) the opportunity for reflection (GOMES; SILVA, 2018); (vii) dynamism (BARRETO; BECKER; GHISLENI, 2019).

Experiments in teaching and learning with the use of gamification have been successfully applied in several areas of knowledge and disciplinary content in the classroom (ARAUJO; CARVALHO, 2018), such as for undergraduate students (FRAGELLI, 2017; SANTOS; CABETTE ; LUIS, 2020); in addition to language courses (LEFFA, 2020); technical courses (NEMER et al., 2020) and continuing professional education for educators (MARTINS; GIRAFFA, 2018).

Although theoretically beneficial, the creation of gamified pedagogical practices in digital media poses strong challenges, such as the need for technological support and the costs involved (DICHEVA et al., 2015), the development of digital skills and competences by educators (MARTINS ; GIRAFFA, 2018), in addition to the need to understand the elements of games and their combined use to achieve the teaching objectives (GOMES; SILVA, 2018).

However, Leffa (2020) suggests that the relevance and the didactic design of the content are more significant in the engagement of students than the elements of gamification, in a context in which the triad "pleasure, persistence and overcoming" is key in the process of

apprenticeship. Silva (2020) confirms this understanding and states that the use of gamification, purely, does not guarantee engagement - which must be aligned with teaching methodologies and adequate and consistent content.

3. Methodology

For the elaboration of the present work, a gamified training ("game-course") was created, with a proposed duration of about one hour, using an online platform. The training narrative (storytelling), which permeated all the proposed theoretical content, was built under the current context of social distance and the need to implement distance practices, a moment that teaching professionals go through.

We worked with the technique of creating personas - imaginary individuals who harbor some of the common character traits of a group of people (BURKE, 2015) - in order to: (i) generate identification of participants (teachers) to real situations everyday life; (ii) welcoming the pain felt by this audience, offering solutions that are feasible to be implemented. There was also the use of multimedia to give greater engagement to the training, such as: (i) videos, (ii) animations, (iii) figures, (iv) practical cases and (v) theoretical articles, as well as the use of direct language and humor.

Following the metrics proposed by Costa and Marchiori (2015) and as a way to increase the engagement and motivation of the participants, a progression dynamic was used: the training was divided into ten stages, each to be carried out in an orderly sequence so that access to the next stage was released. Regarding game mechanics, challenges and timely evaluation (feedback) were used. We also worked with game elements such as: (i) score: from zero to ten for each exercise, according to more or less adequate answers, being offered the possibility to return to the proposed exercises and redo them to obtain more points and have access to the most satisfactory answers; (ii) ranking system among the participants; (iii) offering certification (badges) to those who completed all stages with a score equal to or greater than half of the total training points.

In terms of the proposed exercises, five main forms of interaction with the participants were used: (i) creative task (open questions); (ii) multiple choice task; (iii) checkbox task (possibility to mark more than one alternative as appropriate); (iv) the task of filling in the gaps; (v) the task of forming pairs between key concepts and their respective definitions.

The "game-course" was applied between the months of June and July 2020 and had six training classes, totaling 133 enrolled. The study population was formed by volunteer participants who proposed to do the gamified training, which was disseminated in groups of social networks formed by teachers from different regions of the country, who work with education at any level of knowledge - from early childhood education. up to higher education - in public and private networks.

Participants were asked, through multiple choice questions, for information about: (i) teaching time and (ii) which audiences they teach. At the conclusion of the training, the participant should answer: (i) a multiple choice question about his preference to receive the content applied in gamified or traditional expository format through digital (online); (ii) an open question about your experience from the "course-game". We analyzed the responses obtained in a quantitative and qualitative way.

4. Results

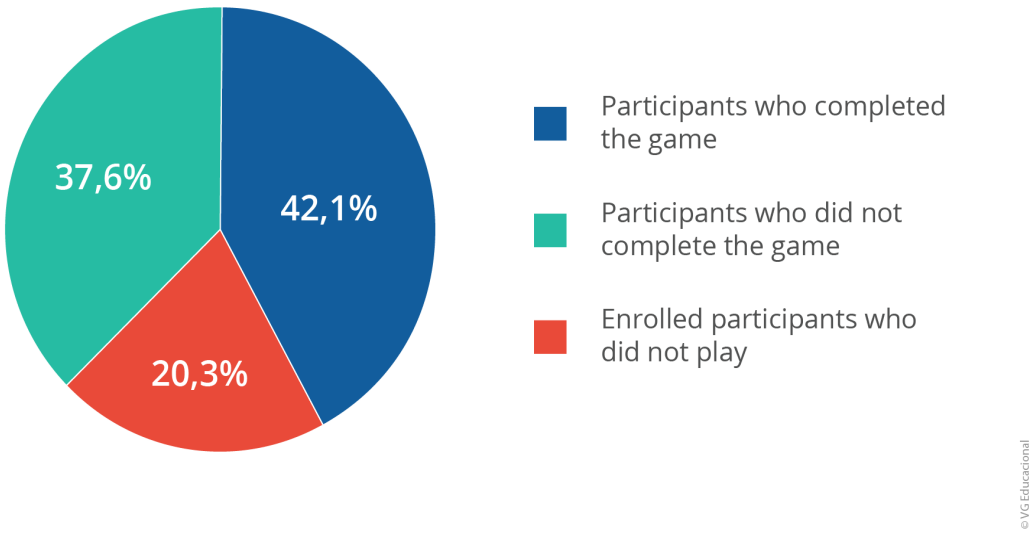
The data obtained through registered participants were analyzed and grouped according to: (i) the total number of participants who completed the training; (ii) among the graduates, the profile of teachers in relation to years of experience and their area of expertise; (iii) after training, the preference of teachers for gamified or traditional online courses; (iv) the qualitative feedback offered by the participants who completed the training.

It should be noted that items (ii) to (iv) were answered only by participants who actually completed the training (42.1%, as shown in Graph 1), so that the other participants, who did not complete it (57.9 %), did not enter our analysis.

4.1. Retention of participants

The gamified training proposed in this project obtained a retention of 42.1% of the participants, as shown in Graph 1, below. At the same time, 20.3% of the enrolled participants did not complete the training, while 37.6% of them did not start it.

Graph 1 - Sample profile: division of registered participants between graduates and non-graduates for the proposed training

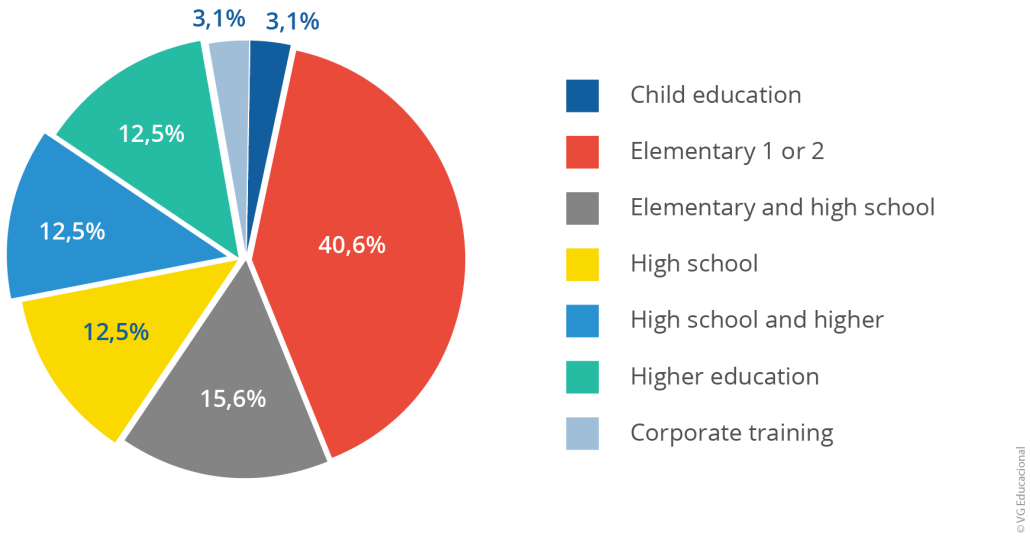


Source: Prepared by the authors.

4.2. Profile of participants who completed the training

Regarding the profile of the participants who completed the "game-course", it is noted that the majority (40.6%) works in Elementary Education I or II; then there are the professionals who work in both elementary and high school (15,6%) (Gráfico 2).

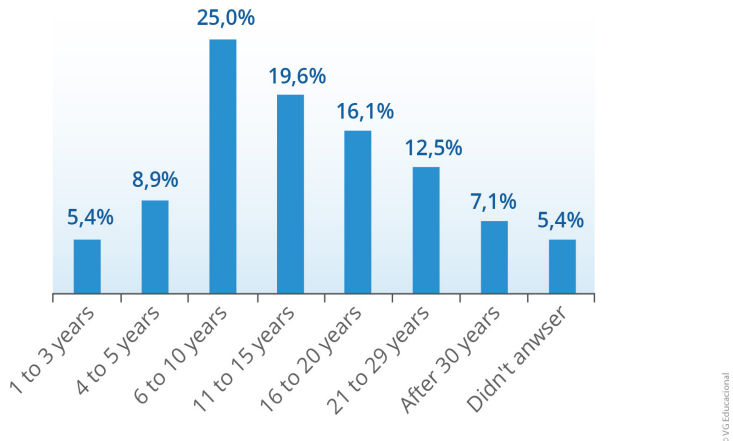
Graph 2 - Performance of teachers who completed the game



Source: Prepared by the authors.

Most of the professionals who completed the "game-course" teach between 6 and 10 years (25.0%), with the highest concentration of respondents having between 6 and 20 years of experience (60.7%) . Despite a lower proportion, 12.5% of the participants had between 21 and 29 years of profession, and more than 7% of our sample reported having more than 30 years of teaching experience (Graph 3).

Graph 3 - Sample profile: experience time of teachers who completed the game

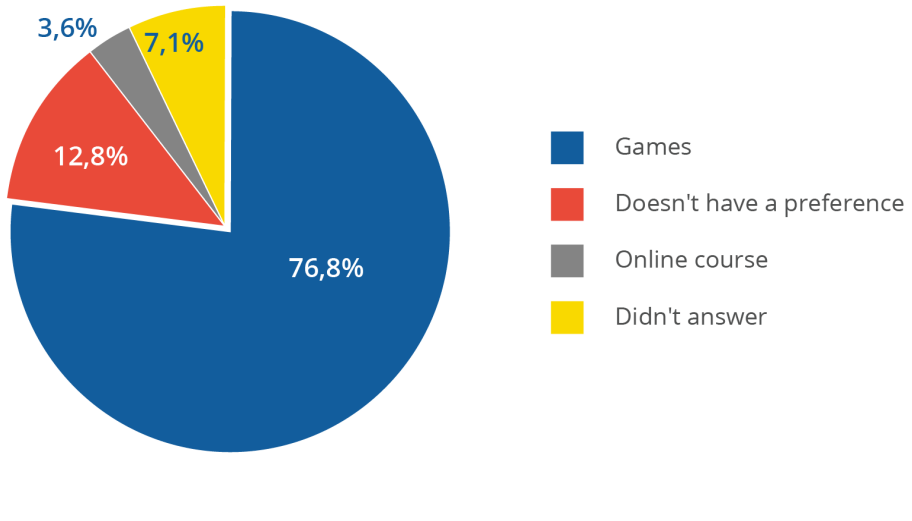


Source: Prepared by the authors.

4.3. Methodology preference for participants who completed the training

Among the participants who completed the "game-course", the preference for gamified training was 76.8% (Graph 4). In this sense, 12.5% of them did not show preference - and could carry out both gamified training and in traditional online format -; 3.6% of participants said they preferred the traditional format and 7.1% of them abstained from giving their opinion.

Graph 4 - Preference of participants who completed the training in terms of methodology

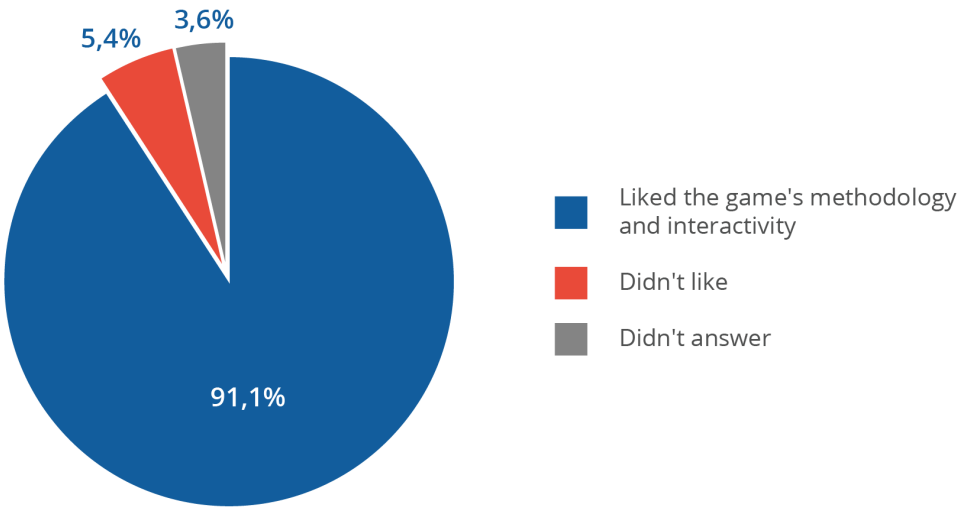


Source: Prepared by the authors.

4.4. About using gamification for training

Approval was obtained from 91.1% of participants who completed the training (Graph 5).

Graph 5 - Enchantment of participants with gamified training



Source: Prepared by the authors.

The main justifications for such acceptance were: (i) the course brought an entertainment bias (25.0%): it was fun to play, time passed quickly, the mood was interesting etc .; (ii) the format tests learning dynamically (23.2%): participants liked the timely feedbacks provided to each question and the possibility of redoing exercises when receiving lower scores; (iii) the methodology is new or innovative (21.4%) (Graph 6).

Graph 6 - Reasons cited as positives of gamified training

Source: Prepared by the authors.

5. Discussion

Regarding the results obtained, we observed that the gamified training proposed in this project reached a retention rate of 42.1% of the participants (Graph 1), practically twice the national average of graduates for traditional distance learning (OLIVEIRA; BITTENCOURT, 2020).

Regarding the sample profile, through this study alone, there is no way to infer whether the fact that the highest percentage of professionals adhering to the training work in elementary school is linked to the format of the training, which, as it has a more playful aspect, may have called the attention of teachers who work with an age group of younger students, or if the profile corresponds, in fact, to a market characteristic of the population of professionals. In any case, in view of the great diversity of spectrum of: (i) years of experience among the participants and (ii) age groups in which they work, the high acceptance rate of the professionals who participated in the training highlights, in our opinion, that stakeholders of all ages and levels can benefit from gamified training.

Regarding the feedbacks received, among the justifications pointed out for the acceptance of the game as a form of training, there are indications that the elements, mechanics and gamification dynamics used in the construction of the tool have contributed to the engagement of the graduates, especially in what refers to the issue of entertainment and fun, as well as the dynamism of learning, with the preparation of exercises and timely feedbacks (COSTA; MARCHIORI, 2015).

In addition, the massive preference of participants for gamified training over traditional online training after the course-game, coupled with the discrimination that the methodology is new and innovative, reinforces the need to search for active teaching strategies in digital approach.

6. Conclusion

The present work aimed to demonstrate, from the point of view of education professionals, the evaluation of a gamified tool, of training for teachers in relation to active methodologies in distance education. As previously discussed, the need to modernize teaching methods is urgent, not only for education to keep pace with the development of technology, but also for the exceptional situation imposed on educators due to the pandemic of COVID-19 and the consequent social isolation . In this sense, it is believed that the use of gamification techniques is of interest to educators, schools, public policy makers in education and the academic community as a whole.

Simple elements of gamification have been used successfully for years, as, for example, in advertising and customer loyalty; however, they are still little used in education (DICHEVA et al., 2015). The gamification process, together with a well-defined scope for the intended purpose, is a motivational factor, capable of engaging participants ("players") on an emotional level (BURKE, 2015).

With this, the gamification strategy is not about transforming digital educational processes, purely, into a kind of video game, but about offering ways for players - in this case, students or participants - to get involved with what is proposed to them. The solutions for these conditions to occur can be relatively basic, as long as they meet the proposed objective (BURKE, 2015).

In this sense, the elements, mechanics and dynamics used in the creation of the present gamified training were simple and did not require complex technological devices; we highlight only the creation of a narrative that resonates with the target audience and a theoretical content transmitted quickly and playfully, based on practical cases, always observing the principle of empathy for the players. In addition, care was taken to present solutions to the proposed cases, since we are dealing with a self-directed approach.

Another characteristic of gamification that is interesting for learning is the possibility of experimenting, failing and remaking (STOTT;

NEUSTAEDTER, 2013). In this way, players are free to test possibilities and are encouraged not to give up for fear of making mistakes. Being able to go back and redo the proposed work, as well as re-accessing the various solutions offered for each alternative, makes learning more dynamic and encouraging. This possibility was offered to the participants of the game-course, as a way to increase knowledge and content retention, in addition to offering the opportunity to obtain a higher score and, thus, better performance in the ranking formed by the participants.

The positive feedbacks obtained from the participants, as well as the high percentage of graduates and the specific comments with which they justified the approval of the game course, at first, indicate that the gamification strategies have relevant potential, as a tool, to increase engagement and to reduce the high dropout rates of distance courses, especially when used appropriately for the target audience.

This study was limited in temporal scope, approach and number of participants. We suggest, for the continuity of the project, the development of new game-courses, with: (i) the distinction of audiences - for example, training focused on teachers of children, adolescents and adults, separately, with appropriate methodologies for each group -; (ii) longer and shorter knowledge trails (qualified by more or less stages and duration), in order to ascertain which characteristics would lead to the best engagement; (iii) continuous training - taking into account that the present training, although it can be re-accessed and redone at any time, was designed in a way to be punctual and unique, lasting about one hour.

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