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GAMIFICATION IN MANAGEMENT EDUCATION: a systematic literature review

GAMIFICAÇÃO NA EDUCAÇÃO EM GESTÃO: uma revisão sistemática da literatura

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Abstract – By combining tolerant and flexible, digital technologies have been widely used to mediate interaction between teachers and students. However, there are still challenges for carrying out quality teaching activities that engage students in learning. In this context, gamification is a tool that can, in addition to improving the teaching-learning process, increase student engagement. Given the importance of the topic, this article aims to systematize the scientific literature on the application of gamification

techniques to teaching-learning processes in education in general and, in particular, in management teaching. Searches were made for scientific articles published in the Clarivate: Web of Science (WOS) and Scopus Preview (SCO) databases related to business, education, corporate, gamification, engagement and management subjects. The articles obtained were organized according to authors, relevancy and journals in which they were published. In addition, there was an investigation and analysis of articles that investigated the application of gamification techniques. Although it is possible to observe scientific studies on the effectiveness of gamification in the engagement of teachers and students, a gap is perceived in the thematic “engagement” associated with management education. Thus, a theoretical model is elaborated that articulates the gamification, motivation, engagement and learning constructs with the context of innovation in management education. Finally, the work presents theoretical propositions and a research agenda on the subject in question, where it can be used to develop more comprehensive future studies, in order to increase the forecasting capacity, in order to allow the development of strategies to improve the process. of student learning.
Keywords: Gamification. Management education. Engagement. Learning. Motivation.

Resumo - Ao combinar tolerantes e flexíveis, as tecnologias digitais têm sido amplamente utilizadas para mediar a interação entre professores e alunos. No entanto, ainda existem desafios para a realização de atividades de ensino de qualidade e que engajem os alunos na aprendizagem. Nesse contexto, a gamificação é uma ferramenta que pode, além de melhorar o processo de ensino-aprendizagem, aumentar o engajamento dos alunos. Dada a importância do tema, este artigo tem como objetivo sistematizar a produção científica sobre a aplicação de técnicas de gamificação aos processos de ensino-aprendizagem na educação em geral e, em particular, no ensino de administração. Foram feitas buscas de artigos científicos publicados nas bases de dados Clarivate: Web of Science (WOS) e Scopus Preview (SCO) relacionados aos assuntos de negócios, educação, corporativo, gamificação, engajamento e gestão. Os artigos obtidos foram organizados segundo autores, relevância e periódicos em que foram publicados. Além disso, houve uma investigação e análise de artigos que investigaram a aplicação de técnicas de gamificação. Embora seja possível observar estudos científicos sobre a eficácia da gamificação no engajamento de professores e alunos, percebe-se uma lacuna na temática “engajamento” associada à educação gerencial. Assim, elabora-se um modelo teórico que articula os construtos gamificação, motivação, engajamento e aprendizagem com o contexto da inovação na educação gerencial. Por fim, o trabalho apresenta proposições teóricas e uma agenda de pesquisa sobre o tema em questão, onde pode ser utilizado para desenvolver estudos futuros mais abrangentes, de forma a aumentar a capacidade de previsão, de forma a permitir o desenvolvimento de estratégias para melhoria do processo. de aprendizado do aluno.

Palavras-chave: gamificação; educação em gestão; engajamento; aprendizagem; motivação

1. Introduction

In recent years, executive education has seen a rapid increase in online student enrollments and distance education (EAD) while traditional, face-to-face programs are in decline (KIM; LIU; BONK, 2005). That is due, in part, to the convenience and flexibility that the online model provides to students with full-time employment, allowing them to attend classes without having to leave their workplaces (LORENZO, 2004).

Faced with this scenario, often referred to generically as distance education, teaching and learning require new skills and methods (SILVA, 2018). Distance education deals with the educational modality in which teaching-learning activities are developed, mainly or exclusively, without students and teachers being physically present in the same place at the same time.

Technologies supported by different media play an active role in the educational system, whether distance or face-to-face, facilitating the learning process (SILVA; SARTORI; CATAPAN, 2014). Thus, the moment is opportune to rethink consecrated teaching and learning strategies, aiming to expand educational approaches through greater interactivity, engagement, and motivation (SILVA, 2018).

Despite the flexibility, ease of access, interactivity, collaboration, and integration between sophisticated technologies and multimedia that the online environment provides, there are still challenges for teaching and learning in this scenario. In spite of the growth of the modality, pointed out by the censuses of distance learning in Brazil (ASSOCIAÇÃO BRASILEIRA DE EDUCAÇÃO A DISTÂNCIA, 2013, 2015), the biggest obstacle faced by online courses are student dropout – whose average rate, in 2014, was up to 25% in different distance education modalities. The lack of time to study or participate in the course is noticed by most institutions as the main reason for evasion. The lack of adaptation to the methodology and the accumulation of work activities are also reasons for evasion (VIANNA et al., 2013). Thus, issues related to the methods proposed by online

courses should be better studied and adjusted to reduce dropout rates (SILVA; RODRIGUES; LEAL, 2019).

Higher education has shown the potential value of a student-centered learning approach, in which high engagement tends to improve the learning process (SAROYAN; TRIGWELL, 2015). Thus, improving student engagement plays a key role in creating better learning strategies (MOFFAT; ROBINSON, 2015). In addition, boosting the potential to increase student engagement and motivation encourages researchers to develop and adopt new educational approaches, such as gamification (HANUS; FOX, 2015).

Gamification has gained high popularity for its ability to influence the participants' behavior in the applications of its methods in the most inverse contexts (BOTHA-RAVYSE; LENNOX; JORDAAN, 2018; GARTNER, 2012). Its entry into educational environments and contexts seems to be constantly on the rise, driven by a large amount of research on this field of knowledge (FURDU; TOMOZEI; KOSE, 2017).

In line with what was presented in the last years, gamification has gained high popularity because it influences the participants' behavior (BOTHA-RAVYSE; LENNOX; JORDAAN, 2018). However, so far, no studies have analyzed, in a systemic and preventive way, the relationship between gamification, motivation, engagement, and learning. Thus, this work is set to answer the following question: *what is the state-of-the-art about the effect of gamification on the motivation and engagement of executive education students during their learning process?*

2. Research Problem

Business dynamics have changed with technological advances and the shift to an engagement economy (WANICK; BUI, 2019). Today, it is possible to create meaningful and engaging experiences through rewarding systems, systems in which a central element is gamification strategies (HILTBRAND; BURKE, 2011).

Gamification has been increasingly developed to motivate and support people, individually and collectively (HAMARI; KOIVISTO, 2015). It is an emerging concept

that inserts game design components into teaching-learning contexts (DETERDING et al., 2011a), aiming to generate value (HUOTARI; HAMARI, 2012). Thus, the core concept behind gamification is the integration of game elements into a non-game environment.

The use of game design elements is usually done through badges, points, and leaderboards (WERBACH; HUNTER; DIXON, 2012). Leaderboards, for example, can stimulate visual comparisons between achievements (or game scores), creating social incentives that in turn generate competition in conjunction with business goals (ZICHERMANN; CUNNINGHAM, 2011). Gamification uses tools found in games – such as reward and feedback systems, clear goals and rules, interactivity, fun, and competition – to support specific processes and to provide participants with the same level of motivation and engagement they receive in a context similar to that of an entertaining game (FARDO, 2013).

On the other hand, teaching methods have undergone incremental innovations aimed at improving student learning. For Dolmans et al. (2005), problem-based learning (PBL1) represents a relevant, complex, and widespread change in academic practice – particularly in higher education. PBL is based on four learning perspectives: constructive, self-directive, collaborative, and contextual learning, where teachers act as facilitators and not as holders of knowledge – with this, teachers aim to help students find answers to their own questions (DOLMANS et al., 2002).

Another approach that is still little adopted and known is experience-based learning (EBL2). This approach focuses on the student's experience (ANDRESEN; BOUD; COHEN, 2020), which may include past or current events in his/her life, or even those arising from their participation in activities implemented by teachers. PBL and EBL are interactive forms of learning widely used in higher education and both are enhanced by gamification techniques and facilitate student exposure to problematic situations (HUANG; RAUCH; LIAW, 2010). In this context, simulations,

[1] *Problem-based learning* (PBL) is a teaching technique that uses problems to be discussed in a group. This teaching methodology was first adopted by the universities of McMaster, Canada, and Maastricht, Holland, around 1969 (DOLMANS et al., 2005).

[2] *Experience-Based Learning* (EBL) has the distinctive feature that the student's experience occupies a central place in all teaching and learning considerations (ANDRESEN; BOUD; COHEN, 2020).

games, and other gamification-based teaching methods have a substantial impact on teaching concepts and applications (RUBEN, 1999).

Zichermann and Linder (2010) argue that a well-designed game enables substantial psychological rewards simply by focusing on the intrinsic motivations of the participants. Most of the existing experimental studies show that gamification has a significant influence on student engagement (BARATA et al., 2013), motivation (ŠĆEPANOVIĆ; ŽARIĆ; MATIJEVIĆ, 2015), learning outcomes (LEONG; LUO, 2011), and performance when performing a given task, through the incorporation of game mechanics and elements, making the tasks more attractive (PEDREIRA et al., 2015).

Gamification can also produce changes in behavior through the formation of habits, reward reinforcement, and emotional response of individuals participating in the experience, thus requiring fewer cognitive resources each time a desired activity is reproduced (ROBSON et al., 2015). For this reason, gamification can be a powerful solution to solve motivational problems within learning or professional contexts (SAILER et al., 2017).

Student engagement in academic disciplines, although not as new as gamification, is still the subject of much debate. We have widely studied student engagement from a scholarly standpoint. However, due to the richness of theoretical constructions, its understanding still represents a major challenge (COLE et al., 2012). This work, therefore, seeks to fill a gap in the literature by analyzing the relationships between gamification, motivation, engagement, and learning.

The next section describes the methodological procedures associated with the literature review that supported data collection and analysis of results.

3. Methodology

In recent years, gamification has gained high popularity for its ability to influence the participants' behaviors, and their entry into educational environments and contexts seems to be constantly on the rise, driving a greater frequency of research on this field of knowledge. There are publications in the various research divisions of

ANPAD (National Association of Graduate Studies and Research in Administration) in the areas of GPR (People Management and Labor Relations), EQP (Teaching and Research in Accounting Administration), and ADI (Information Management). Furthermore, game-based learning in management education has motivated several systematic literature reviews (CONNOLLY et al., 2012; DAREJEH; SALIM, 2016; JOHNSON et al., 2016; SARDI; IDRI; FERNÁNDEZ-ALEMÁN, 2017), as shown below.

Synthesizing previous research results is one of the most significant tasks for advancing a line of research. Scholars have traditionally used two methods to make sense of earlier findings: the qualitative approach of a structured literature review and the quantitative approach of meta-analysis (AGUINIS et al., 2011). We propose here science mapping as a quantitative alternative to map the structure and development of scientific fields and disciplines (ZUPIC; ČATER, 2015).

Scientific mapping has a workflow with different stages, varying according to the authors. It is complex and unwieldy because it has many steps and often requires many software tools that are not always free. For mapping this work, we used an adaptation of the method proposed by Zupic and Čater (2015).

Thus, the steps shown in Figure 1 were performed following Aria and Cuccurullo (2017), resulting in a bibliographic data framework. Such a frame consists of bibliographic data (authors, journals, years of publication, field of knowledge, keywords) delimited by a specific topic. Thus, they can be used to extract the knowledge that has been produced on that topic. In this study, the bibliographic data framework dealt with gamification use in executive education. The steps referred to as data acquisition and include a selection of the indexed database, retrieval and downloading of the dataset, a preprocessing step that includes import, removal of duplicate occurrences, and data conversion to create a suitable structure (LIBERATI et al., 2009; ARIA; CUCCURULLO, 2017).

The bibliometric process proposed by Aria and Cuccurullo (2017) was implemented based on the PRISMA methodology (Preferred Reporting Items for Systematic reviews and Meta-Analyses), which involves searches using keywords, such as Boolean descriptors and operators used as connectors, to perform searches

in indexed databases. This step is titled identification. A summary of the procedures is illustrated in Figure 1, and the next steps present the methodological route for analysis, search, selection, and analysis of articles.

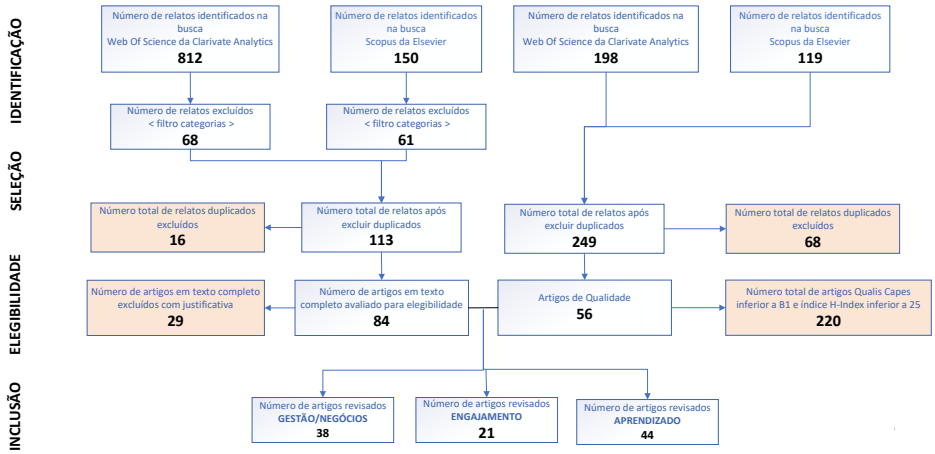

Figure 1 - Categorization and selection of researched articles.

The search was performed on Clarivate Analytics' WoS and Elsevier's Scopus databases. After ad-hoc searches in the databases for articles that have already investigated gamification in management education, the following research question was formulated: what is the state-of-the-art on the effect of gamification on the motivation and engagement of executive education students during your learning process?

Based on the formulated question, we defined the following search string:

String 1: (TS = ("BUSINESS" OR "MANAGEMENT") AND TS = ("EDUCATION" OR "EDUCATION") AND TS = ("GAMIFICATION" OR "GAME*")*

String 2: (TS = ("CORPORATE" OR "TRAINING") AND TS = ("EDUCATION" OR "EDUCATION") AND TS = ("GAMIFICATION" OR "GAME*") AND TS = ("ENGAGEMENT")*

The search query used keywords related to gamification, game, education, or management. The reason was to gather as many articles as possible about the field and sub-fields of management and to ensure that the journals selected covered the topic as comprehensively as possible. Non-academic books, processes, and

documents were excluded. The search took place in August 2021 and from 2016 to 2021. Thus, 1010 articles were retrieved from the WoS database and 269 from the Scopus database.

After applying the selection and eligibility criteria, and observing the keywords and abstracts related to the research topic, 140 articles were found. The articles were divided into three thematic categories, namely: management and business (38 articles), engagement (21 articles), and learning (44 articles).

In the second stage, the analysis was deepened in the motivation category, to understand, more precisely, how gamification increases student engagement in executive education. Only articles in journals indexed by the ISI WOS and the SCOPUS databases were used as they are the most recognized and used for such purposes (PODSAKOFF et al., 2005). The obtained results are presented in next section.

4. Results

The first part of the analysis was performed using bibliometrics associated with the frequency of articles published over the years, the journals in which the papers were published, and the keywords related to them. The journals that stood out the most in the literature review are shown in Figure 2, namely: International Journal of Management Education (15 articles), Simulation and Gaming (8 papers), Direccion y Organizacion (5), Espacios (5), and Administration-Education and Research (3). When relating the total impact of citations with the most relevant sources, we noticed that the International Journal of Management Education (92 mentions) and Simulation and Gaming (45) reinforce their positions as the most significant journals concerning the research topic.

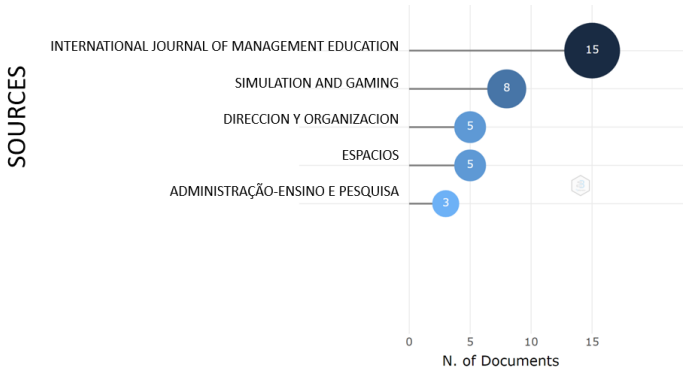

Figure 2 - Most relevant journals.

We created a word cloud, shown in Figure 3, graphically representing the proportion of the number of occurrences of the 30 main keywords most used by the authors. As expected, the terms education, students, management, business, game, and gamification appear in evidence since they were used in the search string. In addition to these words, it is also possible to note that other themes stand out: performance, innovation, motivation, engagement, skills, leadership, higher education, project management, serious games, and simulation. It is also possible to verify the growing interest in the keyword's engagement, motivation, and performance over time, as shown in Figure 4.

Figure 3 - Cloud of keywords used by authors in their articles.

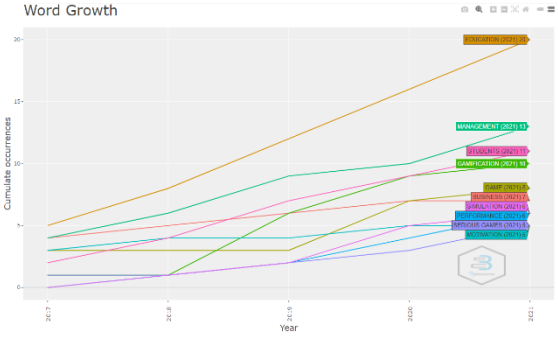

Figure 4 - Growth in use of author keywords over time.

The concept of high education can be found in the work of Gómez Contreras (2020), Enríquez, Troyano and Romero-Moreno (2019), and Signori et al. (2018).

They observed the relationship between innovation in education, engagement, and learning and the moderating effect of the gamification method within higher education institutions through quantitative research on students of courses in higher education institutions. They observed that students have higher learning levels when exposed to the gamified teaching method. We can notice the connection with the concept of project management in the research of Urquidi Martín and Tamarit Aznar (2017), who claimed that there are positive results when gamification techniques are applied in business simulations. Nayar and Koul (2020) added to this observation, highlighting that a gamification is a useful tool for active learning of management students since it allows them to deal with real situations and stimulates them to actively build or renew their knowledge.

The terms serious games and simulation appeared in the bibliometric analysis. These terms are often confused with gamification. However, they represent different approaches. Simulations are executed to train or develop particular skills underlining tasks that require more practical or academic thinking besides providing the opportunity to act and reflect (CALLANHAN, 1999). Serious games combine the characteristics of a game with a simulation. They are developed, not only to entertain players but also, to help them learn and/or change their behavior (CONNOLLY et al., 2012). By participating in these games, participants are expected to acquire new skills, expand existing knowledge and learn about a specific topic (DANTAS; BARROS; WERNER, 2004).

Compared to serious games, gamification requires a strategic vision (TAMBO; ANDREASEN; ULLERUP, 2014). Thus, a potential aspect related to gamification as an innovative approach is the possibility of collecting data and aligning them with business strategies.

Also, among researchers, there are some widely accepted definitions of gamification:

a) gamification corresponds to the use of game design elements in a non-game context (DETERDING et al., 2011b);

b) gamification is a process of improving playful experiences to support the creation of value for the user (HUOTARI; HAMARI, 2011);

c) gamification is the use of game elements and game design techniques in non-game contexts (WERBACH; HUNTER; DIXON, 2012);

d) gamification implements concepts of game design, loyalty programs, and behavioral economics to boost user engagement (ZICHERMANN; LINDER, 2010).

Interestingly, studies that performed some form of experiment in management content (ENRÍQUEZ; TROYANO; ROMERO-MORENO, 2019; BURDON; MUNRO, 2017), simulation content (URQUIDI MARTÍN; TAMARIT AZNAR, 2017), or soft skill content (DIAS, 2017; MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019) did not analyze the effectiveness of adopting gamification when considering different types of content and/or disciplines.

5. Effects of motivation and engagement on learning

The bibliometric analysis revealed some information that led to a more profound observation through reading the articles focused on the themes of motivation and engagement. Virtually all works have concluded that applying gamification can increase or improve student engagement. Only one paper by Rogmans and Abaza (2019) raises doubts about how effective student learning was, even identifying greater student involvement.

Motivation and engagement are two closely related concepts that often overlap (DÖRNYEI; USHIODA, 2013). Motivation is described in the literature as being a fundamental antecedent for action in humans, whereby "being motivated means being moved to do something" (RYAN; DECI, 2000, p. 54). Motivation is used to explain the initiation, direction, intensity, persistence, and quality of behavior (MAEHR; MEYER, 1997). Offering stimuli to motivate someone involves discovering unmet needs and offering possibilities to satisfy them (WERBACK; HUNTER; DIXON, 2012). Li, Grossman and Fitzmaurice (2012) argue that individuals' motivation is maintained, in any environment, through high-quality stimuli and different formats.

In short, while motivation is the intention, engagement is the action to achieve a goal. To generate engagement, it is necessary to provide purpose and enable and

reward good performance. Environments that interact with emotions are effective for people's engagement, which can be defined by the period in which they have a number of connections with the environment (ZICHERMANN; CUNNINGHAM, 2011).

Motivation in education is considered a key element in learning and is used to explain the effort and attention invested by students in the activities in which they are involved (BROPHY, 2013). In this context, it is up to instructors to manage student motivation and raise it whenever possible, so that the learning process has positive results (HARLEN; CRICK, 2003).

Muntean (2011) reinforces that the level of user engagement is decisive for the success of the gamified system. For Vianna et al. (2013), the individual's level of engagement in the gamified system is influenced by the degree of dedication to the environment's activities.

As for the individual's motivation, we identified two types: intrinsic motivation (involving autonomy, mastery, and meaning) and extrinsic motivation (related to external factors such as money, for example) (RYAN; DECI, 2020). Extrinsic motivation requires a reward for the learner to perform the activity, such that it is the means to the end. On the other hand, an intrinsically motivated student performs the task for the interest aroused and not intending to complete it, not requiring any incentive or punishment – i.e., the activity is rewarding by itself (WOOLFOLK, 2006).

Henrie, Halverson and Graham (2015) defined student engagement as commitment, participation, and involvement in learning. In this context, measuring student engagement can be a relevant way to assess the effectiveness of using gamification. Indeed, several strategies for engaging students in the classroom environment have been considered. This engagement can be classified into three different categories: (1) behavioral engagement (CE), (2) emotional engagement (EE), and (3) cognitive engagement (CE) (GREGORY et al., 2014).

Behavioral engagement is associated with student participation in classroom resources and activities. On the other hand, emotional engagement illustrates students' positive and effective responses to academic assignments, questions, and activities. Cognitive engagement shows how students solve problems and think creatively about their academic activities (KAHU, 2013).

We can also measure engagement by the time people spend on a specific task, which can occur at different levels according to user interactions. This measurement is often connected to motivation and physical, physiological, and emotional needs, such as competence, autonomy, and relativity. However, measuring student engagement presents challenges (RIVERA; GARDEN, 2021). Indeed, engagement has been measured in various ways. Henrie, Halverson and Graham (2015) categorized the method of measuring engagement into three forms. The first measures engagement by students and teachers completing quantitative questionnaires (like the Likert-type scale). The second assesses engagement via qualitative measures obtained through questionnaires or open interviews. The third consists of quantitative observation measures, such as time spent on the activity, or the number of activities delivered.

6. Gamification mechanisms for motivation and engagement

A gamified environment tends to connect with the user's motivational results through elements designed to boost these expected results (MORA et al., 2015). Thus, the main challenge of gamification in management is to align intrinsic and extrinsic rewards with business goals to keep the user engaged and motivated (KAPP, 2012).

Zichermann and Linder (2010) argued that a well-designed game enables substantial psychological rewards simply by tapping into the participants' intrinsic motivations. For the authors, the central challenge is to attract new generations and, above all, to meet their expectations in terms of fun, challenge, and sociability, exposing what games offer in terms of benefits.

On the other hand, analyses of gamification-based pedagogical practices show a limit between engagement and frustration. To keep players engaged and minimize frustration, the articles suggest using some mechanism to situate the context of the game. A widely used tool is the leaderboard, which visually presents the achievements accomplished by each participant so that they can be a motivating element to encourage progress and rise in position (ENRÍQUEZ; TROYANO; ROMERO-MORENO, 2019; MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019; DIAS,

2017). Also, the game should start slowly so the players can familiarize themselves with the different elements and requirements to complete it. After this step, the pace needs to improve to keep players engaged (SHANBARI; ISSA, 2019).

Regarding the rewards, the scoring system should be used so that each challenge must be associated with a certain number of points and provide quick and easy feedback, allowing an immediate association with the classification (ZICHERMANN; CUNNINGHAM, 2011). Finally, one can also use medals and trophies to recognize the importance of the work done (PRASAD; MANGIPUDI; VAIDYA, 2019; GÓMEZ CONTRERAS, 2020; MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019; DIAS, 2017). Thus, feedback refers to relationships and progressions. Feedback should be given as soon as possible because, in a game, engagement is also achieved by immediate feedback and making personalized comments on achievements (DIAS, 2017). The leaderboard – ranking – is a means of presenting feedback to students.

According to Silva, Rodrigues and Leal (2019), educational games must follow specific mechanics and dynamics. The game dynamics instruct the participants' behavior while performing the required skills. Although the game variables are unlimited, they must be closely related to the motivation and involvement of the player when participating in the activity (MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019). Some authors (SHANBARI; ISSA, 2019; PRASAD; MANGIPUDI; VAIDYA, 2019; NAYAR; KOUL, 2020; GOMÉZ CONTRERAS, 2020; SIGNORI et al., 2018; DIAS, 2017) demonstrated these dynamics in Table 1.

ARTICLE	**GAME DYNAMICS** (Desires and emotions that the game arouses in players)
Shanbari and Issa (2019)	To minimize frustration, the game starts slowly and over time picks up the pace to keep players engaged.
Prasad, Mangipudi and Vaidya (2019)	Intrinsic and extrinsic motivation, behavioral change, and self-determination theory.
Nayar and Koul (2020)	Instructor interacts with and motivates students to genuinely get into character and have fun with it.

Gómez Contreras (2020)	Clear language of activities, different way of learning, having fun, and awakening creativity.
Signori et al. (2018)	Feeling of absorption of the class content, involvement and engagement with the teaching process, in addition to addressing the motivating factors for learning.
Dias (2017)	Try without fearing the consequences of failure.

Table 1 - Examples of game dynamics.

Game mechanics describe the rules of operation. With this, it is possible to choose how many are adequate to respond to the learning objective (MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019). Some authors (ENRÍQUEZ; TROYANO; ROMERO-MORENO, 2019; NAYAR; KOUL, 2020; GÓMEZ CONTRERAS, 2020; BURDON; MUNRO, 2017; DIAS, 2017; URQUIDI MARTÍN; TAMARIT AZNAR, 2017) proposed rules and, in some cases, rewards, such as those shown in Table 2.

ARTICLE	GAME MECHANICS (Rule constructs and rewards)
Enríquez,Troyano and Romero-Moreno (2019)	-**Rules:** Attendance; Exercises; Teamwork and Mini work organized into groups and functions (student, teacher, and coordinator); -**Rewards:** Leaderboard: The name of the top three students appears in gold, silver, and bronze, and for the other seven students in the top 10 ranking, the name is highlighted in light blue.
Nayar and Koul (2020)	-**Rules:** Brief lecture with the concept of negotiation strategies in which students worked in groups, characterized by a role (seller, buyer *etc.*).
Gómez Contreras (2020)	-**Rules:** The activity was applied through storytelling where the scenario was the business environment. At the end, some challenges were proposed to solve a problem, thus involving students and teachers as characters within the narrative; -**Rewards:** medals, trophies, and points.

Burdon and Munro (2017)	-**Rules:** explore site; workshop activities to review audit procedures; online assessment.
Dias (2017)	-**Rules:** Start with lectures, introducing the main concepts. Then, students are invited to participate in problem-solving activities, by themselves or in groups, with the teacher in the role of facilitator; -**Rewards:** Points, personalized feedback, badges, and leaderboard.
Urquidi Martín and Tamarit Aznar (2017)	-**Rules:** Those involved simulate participation in the management of a company and establish a long-term strategy, making decisions based on information. Thus, the result obtained (profit or loss) allows reflection, analysis and interpretation by the students, which proves to be very educational.

Table 2 - Examples of game mechanics.

In summary, the increasing use of gamification in all types of education (online, hybrid, and regular classroom) has the potential to improve student engagement and thus learning outcomes and performance (DIAS, 2017). In this context, measuring student engagement can be an important way to assess the effectiveness of using gamification in the classroom (ROGMANS; ABAZA, 2019).

7. Theoretic model

Student engagement is an increasingly relevant topic in education, particularly in contexts where there are reduced completion rates of online courses in the distance modality, as well as in high dropout rates in traditional higher education courses (HENRIE; HALVERSON; GRAHAM, 2015). In addition, adding discipline – it is possible to propose a complete model, expanding the possibility of adopting gamification for some courses or even the entire institution, increasing the impact of methodologies such as PBL and EBL.

We discovered that most empirical studies claim that gamification allows

learning to happen as students feel extrinsically and intrinsically motivated – the combination of strong motivation and high task engagement facilitates a successful learning experience (RYAN; DECI, 2020; ŠĆEPANOVIĆ; ŽARIĆ; MATIJEVIĆ, 2015; LEONG; LUO, 2011). Based on the literature analysis, no causality between learning and gamification was identified, with no direct relationship with motivation and engagement.

Thus, after analyzing the articles studying the relationship between gamification, engagement, motivation, and learning, the theoretical model of Engagement Based Learning illustrated in Figure 5 was formulated. The proposal of this theoretical model is relevant for researchers aiming to study the effect of applying game-based resources in executive education, as this is an area in which such teaching methodologies are beneficial.

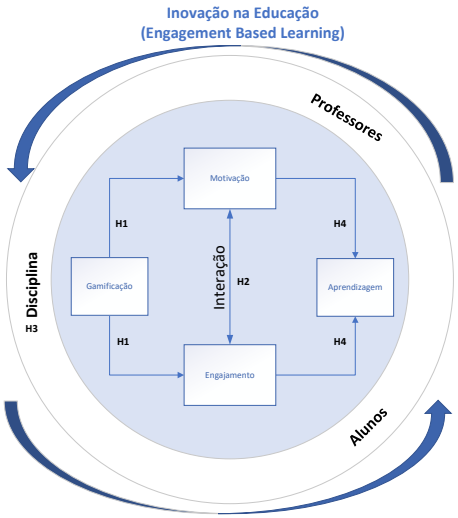

Figure 5 - Theoretical model for innovation in education through the use of gamification.

In this model, learning is defined as how teachers can effectively deliver the proposed knowledge while students share and acquire knowledge with their peers (DOLMANS et al., 2002).

Engagement is defined as commitment, participation, positive responses to assignments, and student involvement in the learning process (HENRIE; HALVERSON; GRAHAM, 2015; KAHU, 2013). It can be classified in three ways: behavioral, emotional, and cognitive (GREGORY et al., 2014).

On the other hand, as already presented, motivation is defined as the connection that allows the performance of an action (RYAN; DECI, 2020, p. 54),

influencing behavior to achieve desired changes (BUCKLEY et al., 2019).

Motivation, whether intrinsic or extrinsic, is used as a mediating variable that accounts for several types of behavior in different contexts and environments. In education, it is considered a key element in learning and used to explain the effort and attention invested by students in the activities in which they are engaged. In this context, it is up to the instructors to manage student motivation and raise it whenever possible, so that the learning process has positive results (SILVA; RODRIGUES; LEAL, 2019).

Engagement is achieved by making each person a participant in a game, performing a series of activities with varying levels of difficulty that require different skills. Thus, the game ultimately promotes the development of modeling skills and analytical thinking (DIAS, 2017). Motivation, on the other hand, is achieved through an attractive learning process with the application of gamification techniques that allow influencing behavior and achieving the desired changes to reach ideal goals. That, in turn, will translate into better academic results while promoting extrinsic motivation (MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019). However, one should note that the choice of the type of content or course in which gamification is applied is a relevant factor in the outcome (JOIA; LORENZO, 2021). Hard-skill disciplines are associated with content that requires the use of equipment, data, software, numbers, equations, and charts (MAHMOUD, 2013). Soft-skill ones are associated with management skills, interpersonal skills, interactions with others etc. (PATACSIL; TABLATIN, 2017).

In other words, the purpose of gamification is to generate or transform experiences to convey feelings and engagement similar to that of a non-serious game, but without having fun as a purpose (ROGMANS; ABAZA, 2019). Gamification uses the emotional and immersive qualities of the game, but does not imply a complete game (MAGRO; MARTÍN-PEÑA; DÍAZ-GARRIDO, 2019).

A hinge on the literature review, the main stakeholders – teachers, students, and subjects – who use or are impacted by gamification in an educational context were identified. With this, the relationship between motivation and engagement will illuminate the understanding of the effects of adopting gamification in addition to student learning.

To understand the impact of gamification on student motivation and engagement and improve learning in executive education, some hypotheses can be formulated, according to the researched scientific literature, as follows:

Hypothesis 1: “The use of gamification is positively associated with increased student motivation and engagement”.

Motivation is a fundamental element in the learning process, especially in online environments, because motivated and engaged students perform activities more regularly. This hypothesis is supported by Signori et al. (2018), who pointed out the moderating effect of gamification on the learning process. Prasad, Mangipudi and Vaidya (2019) stated that applying gamification provides high engagement among participants. The intrinsic rewards provided by the meanings of gamification elements can be good ways to increase motivation and engagement (PINK, 2011).

Hypothesis 2: “The use of gamification is positively associated with increased interaction between teachers and students”.

The interaction between teachers and students is one of the main challenges of online teaching (JENA, 2020). On the one hand, synchronous activities through screens can distance the relationships between teachers and students and even between the students themselves. On the other hand, asynchronous activities can become instrumental as the student only seeks to perform specific tasks. Deterding et al. (2011b) identified that motivational resources induce people to interact with the application according to their needs. Thus, gamification with motivational resources can improve interaction mediated by digital technologies. Furthermore, this hypothesis is supported by Gómez Contreras (2020), who identified an increase in students' autonomy and commitment to each topic or activity proposed in the learning phases, resulting in elevation, engagement, and social interaction, among students.

Hypothesis 3: “The impact of gamification depends on the type of course and the format through which it is taught”.

According to Joia and Lorenzo (2021), the results of using online technologies in teaching are associated with the type of content or course. Technologies have different effects on disciplines based on hard skills – working with equipment, software, and equations (MAHMOUD, 2013) or soft skills – which privilege

interpersonal skills and leadership (PATACSIL; TABLATIN, 2017). Among the analyzed studies, Shanbari and Issa (2019) found positive results when adopting gamification in simulation disciplines. Rogmans and Abaza (2019), despite experimenting with the gamified approach in management disciplines, were unable to assert effectiveness beyond academic learning. Thus, it is necessary to assess which types of subjects and/or content are more conducive to gamification.

Hypothesis 4: “The increase in student engagement and motivation via gamification is positively associated with increased learning”.

According to Klock et al. (2014), different research and initiatives have been performed to improve and increase the motivation and engagement of online students, among them gamification. Also, according to the authors, game elements are related to human desires and needs as rewards, status, and challenges, among others. Gamification can be used to meet these needs in education, to motivate and engage students to be more participative, increase their relationship with their peers and improve their learning.

Gamification can be an excellent tool for improving engagement and motivation by increasing student participation in activities related to the learning process in different ways. One of such reinforces the context that strategies such as the use of bonuses, medals, competition, and goals are actions that, when worked in a contextualized way, encourage the student to participate in activities that perhaps before would not produce the same effect. That is because gamification returns the pleasure of the task and the feeling of being in a community, participating in something that provides a goal with different paths but that leads to the same point – a more dynamic and enjoyable way of learning (TOLOMEI, 2017).

Klock et al. (2014) pointed out that, by working with scores and experience levels, the user is encouraged to seek activities to meet goals and achieve objectives. These factors dialogue with each other, increasing the sense of socialization and collaboration, not to mention the increase in continuous feedback, providing the notion of progress in an activity performed during the learning process.

8. Final considerations

This paper presents a review of studies that address issues related to gamification in management education to illustrate and explore this new area of research. This systematic analysis shows that gamified strategies obtain varied results depending on the type of discipline or area of knowledge. Furthermore, it is significant to mention that most gamified applications are used for management, business, education, and engagement. Strategies involve particular reward systems and are reinforced by accumulating points, leaderboards, and, in some aspects, symbols (badges) that represent evolution within the environment.

Furthermore, the opportunities arising from gamification applied to executive education, particularly the observation of students' engagement levels, are significant to improve current practices. Keeping students involved and motivated around academic activities can be essential in controlling dropout, satisfaction, and learning.

The research also raises questions about the appropriate way to measure engagement. Although most existing studies measure commitment through surveys among students, all studies point to a survey centered on one or few subjects, i.e., there is no observation of students' behavior for an entire class with its several disciplines. Including teachers and the educational institution itself brings to this initiative all the actors who are, and can be, impacted by the adoption of gamification. Also, no studies were found in the literature that indicates that increased student engagement improves dropout rates from a course or even increases enrollment indicators.

Other areas can also be explored, such as the differences in the student's engagement in management education, MBAs, and lato-sensu courses, concerning Basic education students, where the age difference and familiarity with games must take into consideration. Furthermore, it is possible that gamification in different types of disciplines – such as calculus or ethics, as examples – may have different effects, which brings another opportunity for further research in this area, particularly when investigating the customization of gamified applications.

It is also fundamental to state that gamification has ethical limits (DIAS, 2017). There are situations where there is a risk that the context of an experiment will be

altered to the point of obscuring the true nature of a task, potentially invalidating the participants' consent (KIM; WERBACH, 2016). When the attributes of a game applied to non-game contexts are mandatory, invasive, or exploitative, gamification becomes a tool to decrease resistance. The moment game attributes are added to deceive, coerce or appease the participants concerning the nature of the task, gamification becomes unethical. Therefore, attempts to gamify an activity must pass ethical scrutiny about these concerns, making the ways and purposes for which a task was gamified transparent and available (KIM; WERBACH, 2016).

9. Study limitations and future steps

This study was limited to the ISI Web of Knowledge and Scopus databases, although these are the two most recognized databases in academic fields. A further limitation of this work concerns the validation of the findings since this was limited to the author's own analyses. Another limitation stems from the search expressions implemented 'Gamification', 'Gamification and Management', and 'Gamification and Education' resulted in a database sample of 84 papers after eliminating duplicates and applying the defined inclusion/exclusion criteria. Furthermore, in this type of research, one can always question the quality of the keywords applied, since the choice of other words could result in other results and, consequently, in another type of outcome.

As future steps, we expect to develop a gamified online environment integrated with the educational management tool (educational ERP), including features based on gamification resources, such as experience points, badges, progress bars, tables ratings, and awards, which can be used to measure the impact of gamification on student engagement. Furthermore, in terms of future research, it is also suggested that quantitative and qualitative empirical studies be carried out for the application of gamification to management education, as well as the impact of the use of gamification, observing the relationship between motivation, engagement, and student retention. In addition, it analyzes the impact of new methods of applying gamification with different combinations of mechanics and dynamics.

Finally, longitudinal studies are also welcome to establish the impacts of the

adoption of gamification in educational management, considering not only the effectiveness in the learning process but also in the control of educational evasion, allowing researchers to draw new conclusions about the topic question.

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