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CHAPTER 8

Gamification as a methodological tool in andragogical teaching

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ABSTRACT

This article aimed to discuss the use of gamification as a tool of active methodology, to assist in the didactic process of adult education, highlighting the importance of understanding the needs of students and improving the teaching-learning process. With the changes that information and communication technologies have caused in the field of education, teachers need to adapt to better teaching methodologies for the new generation of connected students. The active methodologies allowed students to actively participate in classes with the help of tools inserted during the teaching-learning process such as gamification, generating an environment that favors the student's interest and engagement with game reasoning in non-game activities.

Keywords: Gamification, Andragogy, Technology.

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INTRODUCTION

Currently, several methodological tools are used to facilitate the teaching-learning process, with the new generation of students who are entering higher education classrooms, adapted tools are needed to better use this process.

As one of these tools, gamification can be used in methodological applications as a facilitating tool for pedagogical teaching. Gamification is based on the use of game elements, such as mechanics, thoughts, and strategies, in a context outside the games, to motivate individuals, help solve problems, and promote learning (KAPP, 2012 *apud* FARDO, 2013).

To use this methodology, the teacher must have a certain mastery of the technological tools, and prior knowledge about the available methodologies, in addition to the ability to diversify classes to promote the students' enthusiasm to experiment and experience new forms of learning (TOLOMEI, 2017).

The active methodology must be adapted, considering the needs of the student together with the teacher, the principles for applying gamification will be the basis to guide the teacher in his activity. Thus evidencing the importance of studying new methodological tools to better meet the needs of the student, promoting teaching and enthusiasm for learning.

Thus, this article proposes to conceptualize andragogy, technology, and gamification and discuss how games can be used as an active methodology to assist didactic learning in adult education.

ANDRAGOGY

Universities around the world are increasingly debating the need to adapt their teaching practices, recognizing that most adults have learning styles that are different from those of children. In this context, the implementation of active methodologies has stood out as an effective approach to engage students in a more meaningful way in their learning processes.

Taking into account this difference in learning, the term pedagogy, which, according to the writer and philosopher Paulo Ghirardelli (2007) derives from the word *Paidagogo,* originated from *paidós* – child and *agodé* – conduction, was not necessarily someone responsible for the teaching of the child itself, but rather some slave or servant who guided the child to the place of learning. Unlike the origin of the word and its ancient meaning, nowadays, a pedagogue is one who, according to Ghirardelli (2007, p. 6) "[...] deals with the intellectual and technical means that enable teaching and learning optimally".

In addition to Ghiraldelli, De Aquino (2008) argues that "'Pedagogy' literally means the art and science of educating children". For the author, in pedagogy, the protagonist is the teacher and not the student. De Aquino (2008) observes that,

> [...] In the pedagogical model of learning, teachers take full responsibility for making decisions about what will be learned, and how and when it will happen. This science is based on the assumption that students or learners are not yet mature enough to prepare for life and make the right decisions, and therefore should learn only what is decided and taught by teachers. (DEAQUINO, 2008, pp. 10-11)

At another time, Carvalho (2016) also adds that,

> [...] Pedagogy, therefore, would be the science of education that studies the practices, methods, and principles of education. This concept encompasses the educational process, an exclusively human practice of construction and transmission of knowledge within a socio-cultural context [...] (CARVALHO, 2016, p. 81).

Starting from the origin of the word, pedagogy does not seem to be the appropriate term for the educational field at the higher level, since in this we no longer deal with children. In the academic universe, the most appropriate would be the use of the theory of Andragogy (CARVALHO, 2016).

In 1833, Professor Alexander Kapp created the term Andragogy to describe Plato's educational philosophy. In his book, Kapp notes that Plato's documents involved not only the education of young people but also that of adults. In the book, Kapp also justifies the need for adult education and elaborates on what qualities are important to develop, stating that character formation is the main value of human beings (SVEIN LOENG, 2017).

The andragogical process involves different phases in a congruent way and involves both forms of learning: total and individual (KNOWLES, 1980). Knowles mentions in his book the following phases:

> 1) The establishment of a climate conducive to adult learning;
> 2) The creation of an organizational structure for participatory planning;
> 3) The diagnosis of learning needs;
> 4) The formulation of learning directions (objectives);
> 5) The development of a project of activities;
> 6) The operation of the activities;
> 7) The diagnosis of learning needs (evaluation). (KNOWLES, 1980, p. 59)

According to Carvalho (2016), in andragogy, on the one hand, we have the teacher who has a role as a mediator of knowledge and motivator of learning for students. And on the other hand, we have independent students, with autonomy and with experiences that can add to the acquisition of new learning, "[...] Because, for adult learners, the knowledge to attract attention must be contextualized, meaningful and as applicable as possible in personal and professional life. [...]" (CARVALHO, 2016, p. 84).

TECHNOLOGY

Information and Communication Technology (ICT) is imprinting unexpected changes in today's society in all spheres and also in the teaching-learning process. The evolution of ICTs allows the population to have access to information, which brings profound changes in various areas of knowledge, especially in the academic field (LOBO & MAIA, 2015).

To be inserted in the information society does not mean only to have access to technology, but to know how to use this technology to search for and select information that allows each person to solve everyday problems, acting in the transformation of their context, thus favoring the creation of a network of knowledge (ALMEIDA, 2008).

Most university students were born between the end of the twentieth century and the beginning of the twenty-first century and a large part of this public welcomed in universities grew up with access to video games, television, and computers. As a result of the ease of access to information, students have a certain immediacy regarding the applicability of the knowledge acquired, when the application is not possible in the short term, they lose interest in the subject or discipline, compromising the teaching and learning process.

Gamification is an option that can be inserted in the didactics of higher education, to seek improvement in this process, generating an environment that favors the student's interest by introducing elements of games in non-game activities (VIEIRA *et al*, 2018).

In the classroom, the use of ICTs requires a teacher profile with skills that meet a connected generation that is receptive to different types of information and technological devices. The protagonism on the part of the student is justified, since he has in his social practice a certain ease of access to information, based on the principle that using ICTs in a learning process in which students are protagonists in the construction of knowledge (TOLEDO; MOREIRA; NUNES, 2017).

Research shows that, although it is consensual that the use of Information and Communication Technologies (ICT) in education cannot replace the teacher, it is understood that the teaching work can be supported by these means (SILVA; MARCHELLI, 1998; REZENDE, 2002). These digital technologies establish a more collaborative and instantaneous configuration, which transforms the equipment used in the production and dissemination of knowledge as well as the rationality of those involved (ARCOVERDE, 2006; MORAN; MASETTO; BEHRENS, 2004; MONDO *et al*. 2010).

ACTIVE METHODOLOGIES

The complexity of the various sectors of life at the global, national, and local levels, has required the development of human capacities to think, feel, and act corresponding to the issues of the environment in which one lives (BERBEL, 2011).

Formal education is at an impasse in the face of changes in society, and the idea that basic education with its traditional forms is no longer enough for the individual to participate in an integrative and effective way of life in society is recurrent among education scholars in recent decades, with traditional education being essential for the formation itself, but when only retained, memorized and reproduced, students are positioned as spectators of the world (MORÁN, 2015; BERBEL, 2011).

The knowledge society is based on cognitive, personal, and social skills, requiring proactivity, collaboration, and personalization to acquire it. Traditional methods are standardized, evaluating everyone equally, demanding predictable results, and favoring the transmission of information by teachers (ALMEIDA & VALENTE, 2012).

In Brazil, we live with such diverse educational contexts that range from schools where students spend a large part of their time with texts passed on the board to schools that provide students and teachers with modern information and communication resources. Among these diversities, we find schools that are in the nineteenth century, but with teachers from the twentieth century, promoting the formation of students for the world of the twenty-first century. (BARBOSA & MOURA, 2013)

The methods to be used in the classroom must promote meaningful learning, the teacher must understand that the conception of school has changed and that there is a new profile of students to be formed. For David Ausubel (1980), learning meaningfully is the same as reconfiguring existing ideas. "The most important factor that influences learning is what the learner already knows." In this context, the student's prior knowledge should be taken as something fundamental for the presentation of new information, because in the knowledge that the student brings from his daily life, a scientific concept is integrated (TOLEDO; MOREIRA; NUNES, 2017).

In general, it is possible to see that in addition to the change in the profile of students, there is a motivational crisis, especially in the educational scenario, educational institutions find it difficult to engage their students using traditional resources (TOLOMEI, 2017).

GAMIFICATION

Games, or games, emerged as a human construction and served as a means of initiation for young people about their own culture and their economic and social environment (TOLOMEI, 2017). Still in this line of reasoning, Tolomei (2017) citing Huizinga (1993) narrates that, in the past, games served for society to stay together and bring their ties closer. And he also concludes that "[...] games have evolved according to the needs of society" (TOLOMEI, 2017).

In games, there are mechanisms of rules, objectives, results, and rewards. These mechanisms were brought to the concept of gamification (TOLOMEI, 2017).

For Krajden (2017), gamification is a method that involves dynamics, mechanisms, and elements of video games and applying them in real-life situations. Its main objective is to attract people to change their behaviors to achieve specific goals, using fun and creative solutions to solve many problems.

Busarello (2018), using Kapp (2012) as a reference, concludes that "Gamification is based on the principle of thinking and acting as in a game but in a context outside the game". It also describes that gamification, which has as its central point the engagement of people, the motivation of their actions, the promotion of learning, and the solution of problems, is based on four basic principles: the basis of games, mechanics, aesthetics, and game thinking.

Vieira *et al.* (2018) adds that,

> Gamification has the potential to involve the student in solving real problems, helping him in the process of attributing meaning to what he studies, and allows the teacher to develop teaching strategies more focused on the students' reality, using a language and aesthetics similar to that found in games, making the learning process more interesting. [...] (ALVEZ *et al.* (2014) *apud* VIEIRA *et al.* (2018))

A great benefit of using gamification is that it can perhaps provide students with a way to visualize the results of their actions and learning, as it becomes easier to capture the relationship of the parts with the whole, in the same way as it happens in games (FARDO, 2013).

DEVELOPMENT OF THE GAMIFIED CLASSROOM EXPERIENCE

Gamification is an emerging phenomenon (FARDO, 2013) and comes from the premise of thinking and acting in a game, but in a context outside the game (BUSARELLO, 2018).

The term *gamification* - which translates from the word gamification - was first used by Nick Pelling in 2002 (VIANNA *et al.* 2013 *apud* MARTINS & GIRAFFA, 2015) and has as one of its objectives to motivate and engage students.

To apply gamification as a real active methodology, some steps and specifications of educational planning must be followed (Alves *et al.* (2014) *Apud Vieira et al.* 2018):

1. Interaction with games: interact with games from different platforms to assimilate the various logic and mechanics that games provide;
2. Know your audience: observe and analyze the different characteristics of your audience;
3. Define the basic purpose: define which theme will be addressed, the areas of knowledge involved, the contents that will be associated, and the skills, attitudes, and behaviors that will be developed and enhanced;
4. Understand the problem and the context: ponder on which day-to-day problems can be addressed and explored with the game and how they can relate to the content studied;

5. Define the objective or mission: analyze whether the mission of the gamified strategy is clear and achievable and whether it is in line with the competencies and theme that will be developed;
6. Develop the game's narrative: Verify that the game's metaphor narrative makes sense to the players and the overall goal of the strategy. Think about whether the narrative will engage your audience and whether the aesthetics used will make sense within the story;
7. Define the environment and platform: determine whether the audience will participate from home or another specific environment such as the classroom. Point the main device with the players;
8. Define the tasks and mechanics: establish the duration and frequency of your audience's interaction with the gamified educational strategy. Point out the mechanics and check if the tasks develop the desired skills and if they are coherent with the narrative. Creation of rules for each task;
9. Define the scoring system: check if it is fair, balanced, and diverse. Establish the rewards and how the *ranking* will be done;
10. Define the resources: Carefully plan the strategy agenda and define the resources needed each day. Check your involvement in each task (if you will need to analyze the tasks or if the scoring will be automatic);
11. Review the strategy: check if everything is compatible and aligned. Think about whether the audience will be engaged and whether they will adhere to the tasks. Check if the tasks have clear and objective rules and if the tasks are varied and achievable. Check if the scoring system is well structured if the rewards are compatible with your audience and if they are motivating. Verify that all resources are guaranteed and that the agenda is appropriate for the public (Alves *et al.* (2014) *Apud Vieira et al.* 2018).

In addition to what was pointed out above, other guidelines and characteristics must be taken into account so that there is a greater approximation of students about the engagement and motivation that occur in games on different platforms.

Fardo (2013) cites some observations by Simões *et al.* (2012) and Werbach & Hunter (2012), which should also be considered when it comes to using gamification as an auxiliary teaching methodology:

- Provide various experiments: as in most games, different possibilities must be provided to achieve the solution of a problem, as this encompasses different personal characteristics in the teaching-learning process and contributes to the educational baggage of each student;

- Include quick feedback loops: In games, the effects of actions are always seen in real-time. While in the school environment, the opposite occurs, the results are seen after a long time. The feedback process should be accelerated so that the search for new ways to achieve the goals is stimulated, you can also give time for the strategy that the player is using to be changed if he thinks he is not achieving the expected results;
- Increase the difficulty of the tasks according to the student's ability: good games always make players find challenges that are at the limit of their abilities. For the student to follow his own pace of learning, different levels of difficulties must be proposed to him, as this can help him to have a personal advancement and can also provide the construction of a good sense of growth;
- Divide complex tasks into smaller ones: in games, the larger purposes are divided into smaller, simpler, and easier to overcome. Thus, the student/player will build his knowledge gradually, "observing the parts of the problem as a whole", ensuring greater motivation and preparing him to overcome the greater challenge;
- Include mistakes as part of the learning process: mistakes integrate into games in a natural way. Therefore, it is necessary to include error as a learning and knowledge process, in addition to making the student reflect on why these errors are part of the process;
- Incorporate narrative as context for objectives: game characters usually have a motivation for their actions, that is, a story that justifies doing what they do. A context must be built so that the student sees that there are reasons for his engagement and commitment and also so that he sees meaning in learning;
- Promote competition and collaboration in projects: games always offer a good deal of competition and collaboration, not always mutually exclusive. The narrative can include these elements, organizing a competition between groups, which can enhance the interaction between students and offer more motivation and more context for the objectives;
- Take into account fun: the learning process should be pleasurable. Good games are fun and they are also good tools for learning. "Thinking about this aspect in education can improve the experience that individuals have within learning environments, which ends up enhancing learning as a whole" (SIMÕES *et al.* (2012); WERBACH & HUNTER (2012) *apud* FARDO (2013)).

Although there are basic concepts for implementing gamification, we must remember that this is still a very recent method that can be molded according to the needs of the teacher, as games

bring us several elements and as well as several possibilities of application in the teaching-learning cycle (FARDO, 2013).

In addition, gamification will be in a constant process of evolution, making it possible to add elements that contribute to a better improvement of the technique and reforming what is not working. [...] "The more involvement and application of gamification, the more the teacher can improve and master the technique, getting closer and closer to a format that works well with students." (SANTOS, 2018).

FINAL CONSIDERATIONS

It is known that we are living in the Information Age and we observe a huge change in the profile of students of all ages, since with new technologies we can know whatever we want anytime and anywhere, making our lives less complicated and more connected, both with our friends and family and with different types of information that arrive all the time.

Technological advancement also provides us with more access to cell phones, computers, and video games, which are tools that can be used by the teacher to help the student better understand and absorb the mediated didactic content, both with the use of the internet and through the use of games, since the latter can instigate people and challenge their abilities.

Therefore, gamification, as an active methodology, is a phenomenon still in its early stages, which can be widely explored by educational means, both to promote learning and to motivate and engage the student with it. As long as the technique is applied correctly by teachers, it is necessary to have total mastery of the content to be gamified and there must also be an understanding of the planning characteristics of the technique and the specifications of how it should be applied.

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