Introduction

Despite technology being present in almost every aspect of society, teachers and students had to face a lot of challenges adopting a generalized distance mode of teaching/learning, resulting from the restrictions caused by COVID-19 pandemic (1). If not properly designed, distance teaching/learning approach may lead to a lack of interest by students in online classes, forcing teachers to seek ways to get student’s motivation/back engagement back (2).

Some strategies that were already entering the classroom gained greater interest, like gamification, which can be conceptualized as the application of games and ludic characteristics in real situations (3,4). It’s recognized that using games in educational environments improves the motivation/engagement of students (5). The use of gamification methodologies has a great potential within demotivated students and teacher who can’t engage them in the learning activities (5,6). Among the most used elements in educational environments that use gamification, the continuous feedback, challenges, competitions, rewards, medals, missions and narratives can be cited. Besides that, teachers and students can participate in activities involving problem solving situations, teamwork, decision making and communication (4).

The great asset of using games in health education, as in dental education for example, is based on its applications as a tool that balances entertainment, interactivity and the possibility of repetition (7). Besides, that games can motivate in all kind of different ways, as the players advance through its steps, being rewarded and developing skills, old or new (8).

The teaching in Dental Medicine is composed by the main components: problem-based learning (PBL), laboratory simulations and clinical skills training (9). In a study conducted by Chang, et al. (9), the virtual reality (VR) was used as a simple and highly accepted for the hands-on activities, using procedures simulations. The VR use is seen as a very important tool as students can learn directly from characters and situations in everyday life. In addition to using their own perspective to make decisions and manage care.

In addition to the clinical skills, the students can develop their scientific development through gamification. The scientific writing is used to increase the critical thinking, problem solving and self assessment (10).

Aims

• Describe the methodology used to design and test a gamified approach in Dental/Medical education;
• Demonstrate the effects of the gamification in the learning process in an e-learning environment and in the skill development for the practical and clinical communication;
• Analyze the student’s behavior and performance during a gamified activity.

Methodology

To carry out this study, a sample of 19 students from the fourth year of Medical Dentistry was inserted in a virtual escape room developed in the Moodle platform. First, the students had to answer a sociodemographic inquiry to determine their profile and analyses their experience with games. After this, a knowledge test was prepared for them, which served as a comparative tool, since this test would be repeated after the game.

The game itself was in an escape room mechanic, where the students were divided in five groups and the objective was to “exit” the virtual room where they were in by solving puzzles and riddles, conducted based in the theoretical context of Orthodontics, cephaleometric points and anatomic structures (figure 1). All the challenges was created using tools incorporated in the Moodle platform, as the H5P, which can create puzzles and crossovers.

As they finish the escape room, they were directed to the same exam they had to take after the game, so that we had a way to compare the performance in both tests.

Before finish the class, the students answered a satisfaction inquiry so we could analyze their opinion about the applied activity.

Results

The sociodemographic survey showed that the participant profile was of individuals who wasn’t used to play games in their daily lives, preferring faster and more casual experiences, such as mobile games, which do not require a great deal of their time.

Analyzing the data collected after the game application, it was noted that, of the five groups, only one did not reach the maximum score, although the resulting time was very similar between the groups, with an average of 15 minutes (graphic 1).

There was a significant difference between the averages of the test applied before and the one applied after the game, showing that there was no significant acquisition of knowledge among the students (figure 2). This can be justified by the fact that the participants have already attended classes on the topic addressed prior to the application of the activity. Despite this, there was a high level of overall satisfaction among the students (graphic 3 and 4), confirming what is said in the bibliography (7). These results appear mainly when students are asked to compare traditional teaching with the gamification methodology applied during the game.

Conclusion

Although there was no significant difference between the averages found, the students showed a high interest and engagement when comparing with the traditional teaching methods; demonstrating that an activity using a gamified methodology can help students to develop not only practical or clinical skills, but also soft skills such as teamwork and problem-solving abilities.

References


Figure 1 – An example of the challenges in the activity.