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The gamification in clinical case sessions in Special Pathological Anatomy: Froggy Jumps

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Introduction

In recent years, gamification in the classroom has had a great boom at different educational levels. Furthermore, its usefulness has been demonstrated in the learning process in higher education, before, during and at the end of a class both in person and online (Espinosa and Eguia, 2016). Its potential as a didactic strategy in teacher training is described, contributing to the acquisition of own content in the design of gamification, development of different skills, creative thinking and with a high degree of satisfaction of the participants (Navarro and Pérez-López, 2022). In this context, there are multiple tools (FlipQuiz, Kahoot, Quizizz, Socrative, Elever, and Edmodo, among others), some of which are free to access, with differences in their

potential and functions. The general objective was to promote the active participation of students in the clinical case presentation sessions on Special Pathological Anatomy (Degree of Veterinary University of Las Palmas de Gran Canaria), developing a complementary task using Froggy Jumps ©2023 Educaplay.

Methods

Sixty-four students enrolled in Special Pathological Anatomy (2022-2023) participated in the clinical case presentation activity. The work groups, made up of two or three students and a professor, supervised the clinical cases. The presentations took place in five sessions of two hours each. Before the presentation, each group prepared a question about their clinical case to be included in the Froggy Jumps game in Educaplay. Each game consisted of questions adapted to the number of clinical cases presented per day, varying from 6 to 8 questions. The games were linked to the subject's virtual campus and became visible at the end of each session. Participation in the game was voluntary. Once the game was finished, the results of each participant's successes and errors were recovered and analyzed.

In addition, a 7-question questionnaire was designed to assess the degree of student satisfaction with the implemented gamification. A Likert scale with five response levels was used, and the results were completed in person and voluntarily. A database was created, including students who had played at least 80% of the Froggy Jumps games. Statistical analysis of data was performed by IBM SPSS Statistics 28. The results were considered statistically significant if the p value < 0.05.

Results and Discussion

The student group was predominantly represented by women (72%), followed by men (26%) and non-binary people (1%). The mean age was 23.41 years (standard deviation of 3.34 years) and a median of 22 (CI 21-43). Participation in the Froggy Jumps game was high (95.3%-89%). The mean score of correct answers on a scale of 10 for each of the games was consistently high, ranging between 9.1 and 8. In other gamification

experiences in Veterinary Medicine, the learning results were evaluated, confirming their usefulness (Conde-Felipe *et al*., 2022). However, in our experience, although the results are satisfactory, they were not the objective of the work, and we cannot associate them with the satisfaction questionnaire results as it is anonymous.

About the game satisfaction questionnaire, the results are summarized in Table 1.

The association between the students' opinion on whether they had liked preparing the game questions with questions 2, 3 and 4 of the satisfaction questionnaire was analyzed, and a statistically significant association was observed at the different levels of the Likert scale. Several experiences have been described with other games, in face to face and/or online, in higher education, including the veterinary degree. The results obtained show

TABLE 1: Results of the satisfaction questionnaire about the Froggy Jumps game

Likert Scale	Q1[1,2,3]	Q2[1]	Q3[2]	Q4[3]	Q5
	Absolute and relative frequency				
Strongly disagree	2 [3.3%]	1 [1.6%]	4 [6.6%]	3 [4.9%]	1 [1.6%]
Disagree	5 [8.2%]	7 [11.5%]	10 [16.4%]	4 [4.9%]	2 [3.3%]
Neither agree or disagree	23 [37.7%]	9 [14.8%]	23 [37.7%]	17 [6.6%]	20 [32.8%]
Agree	19 [31.1%]	22 [36.1%]	12 [19.7%]	21 [34.4%]	21 [34.4%]
Strongly agree	12 [19.7%]	22 [36.1%]	12 [19.7%]	16 [26.2%]	17 [27.9%]

Q1: Participation in the development of the clinical case question of Froggy Jumps; Q2: Capability highlights the clinical case's essential points when preparing Froggy Jumps Quiz; Q3: Promotion of attention during seminar presentations; Q4: Interest as a continuous evaluation system; Q5: General satisfaction level with the gamification methodology. Significant association between: [1]Q1 and Q2 (p=<0.001); [2]Q1 and Q3 (p=<0.001); [3]Q1 and Q4 (p=<0.002).

that gamification is a good tool to motivate students (Agüera *et al*., 2022; Martínez-Alarcón *et al*., 2022; Navarro and Pérez-López, 2022). Regarding the time allocated (Q6) and the connectivity (Q7) when developing the game, 78.7 and 82% received very good opinions for both variables. The level of general satisfaction with the activity was 62.3% in those students who strongly agreed or agreed with it, 32.8% had a neutral opinion, and the remaining percentage stated that they did not agree. These results indicate that we should value more or other didactic alternatives to achieve greater student motivation and consider other factors that could be influencing the lack of active participation in learning.

Conclusions

The results indicate that the game has been a good complementary tool to motivate participation in the clinical case sessions for a group of students.

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