THE USE OF CLICKERS IN PEDIATRIC PRACTICUM CLINICAL SESSIONS IN DENTISTRY GRADE AT VALENCIA UNIVERSITY

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Abstract

Introduction:
Students' involvement and participation are of a great importance in clinical subjects with a low theoretical content, and focused on the application of theoretical knowledge acquired in previous subjects, such as “Practicum I in Pediatric Patients”. Clickers is a very useful educational tool to promote this participation. Objectives. The general aim in this innovation educational project was to provide tools to boost the teaching of the subject “Practicum I in Pediatric Patients”. This was reached improving the teaching of pediatric and adolescent dentistry, as students developed their therapeutic activity in pediatric and adolescent patients attending the dental practice. At the same time, we proposed four specific objectives: 1- To use the clickers in clinical sessions of the subject, to increase motivation and thus promote students’ participation in the improvement of the clinical cases teaching-learning process. 2- To Assess clickers’ usefulness in the achievement of good results in students' grades. 3- To Value students' opinion about clickers, through an anonymous questionnaire with closed questions, in the virtual classroom. 4- To Value teachers’ opinion about clickers, through an anonymous questionnaire with closed questions.

Methods:

First of all, clickers were used in different sessions through the entire academic course. Results were compared to determine if there was an improvement in students' grades. In a second part of the activity, an anonymous questionnaire with closed questions was carried out between students, through the virtual classroom. This anonymous questionnaire had a section for students' suggestions, to improve the use of clickers in coming academic years. We think that questionnaires must be anonymous, as the aim is that students could express their opinions and suggestions freely. The third and last part of the activity was the performance of an anonymous questionnaire with closed questions to teachers, in order to evaluate their satisfaction. As in students’ questionnaires, teachers' questionnaires had a section for suggestions to improve the use of clickers in the coming academic years.

Results:

Results for this innovation educational project and for the use of clickers in clinical sessions showed: A greater interest of students in clinical sessions; An improvement in grades in sessions with clickers; A positive opinion from students about the use of clickers; A positive opinion from teachers about the use of clickers.

Conclusions:

The use of clickers increased motivation and promoted participation of students in the improvement of the teaching-learning process. At the same time, it improved their grades as they learned from their own mistakes.

Keywords: Clickers, Practicum, teaching-learning process.

1 INTRODUCTION

Students' involvement and participation are of a great importance in clinical subjects with a low theoretical content, and focused on the application of theoretical knowledge acquired in previous subjects, such as “Practicum I in Pediatric Patients”. Clickers are a very useful educational tool [NT Stevens, JJ García Rodríguez] to promote this participation (Figure 1), as they allow group questions about real clinical cases and the checking of students' individual answers in real time, with statistical graphics of the different answers. Moreover, the use of this interactive tool can increase students'
participation and attention, improving content uptake, which has a positive impact on grades. It also improves perception, giving feedback and simplifying attendance control.

For all these reasons, we applied for an innovation project that consisted in the use of clickers in clinical sessions of the subject “Practicum I in Pediatric Patients”, in the 5th year of Dentistry at Valencia University. We finally got the project from Valencia University.

In this paper, we explain our experience and results in this innovation educational project.

General and specific objectives

The general aim in this innovation educational project was to provide tools to boost the teaching of the subject “Practicum I in Pediatric Patients”. This was reached improving the teaching of pediatric and adolescent dentistry, as students developed their therapeutic activity in pediatric and adolescent patients attending the dental practice.

At the same time, our four specific objectives were: 1-To increase motivation and thus promote students' participation in the improvement of the clinical cases teaching-learning process. 2-To assess clickers’ usefulness in the achievement of good results in students’ grades. 3-To value students’ opinion about clickers, trough an anonymous questionnaire with closed questions, in the virtual classroom. 4-To value teachers’ opinion about clickers, through an anonymous questionnaire with closed questions.

2 METHODOLOGY

This innovation educational project with clickers was addressed to 70 students of the annual subject “Practicum I in Pediatric Patients”, in the 5th year of Dentistry. At the same time, 7 teachers with a great teaching and research activity also participated in the project.

Clickers were used in weekly clinical sessions of the subject. In these sessions, carried out through the entire academic course in small groups of students, real clinical cases of the dental practice at the Medicine and Dentistry Faculty from Valencia University, treated by the same students are exposed. These an hour and a half weekly sessions are performed in small groups to promote students' participation, and there patients' diagnosis are explained, and possible therapeutic treatments are discussed.
This project was divided in three parts

First of all, clickers were used in different sessions through the academic course (Figure 2). In these sessions, clinical cases with different options for diagnosis and treatment were presented to students, through images, using the software tool “Turning Point”. Students chose their correct answer, which was recorded in an Excel spreadsheet, with all students' names, previously designed by teachers.

![Image](image1)

*Figure 2. Questions presentation and clickers use by students*

Just after choosing their option, students could see the different answers represented in diagrams (Figure 3).

![Image](image2)

*Figure 3. After making their choice, students could see the general answers represented in diagrams.*

In a second part of the activity, an anonymous questionnaire with closed questions was carried out between students, through the virtual classroom. This anonymous questionnaire had a section for students' suggestions, to improve the use of clickers in coming academic years. We think that questionnaires must be anonymous, as the aim is that students could express their opinions and suggestions freely. This questionnaire is shown below (Figure 4).
The third and last part of the activity was the performance of an anonymous questionnaire with closed questions to teachers, in order to evaluate their satisfaction. As in students' questionnaires, teachers' questionnaires had a section for suggestions to improve the use of clickers in the coming academic years. This questionnaire is shown below (Figure 5).
3 RESULTS

Specific results expected from this innovation educational project and from the use of clickers in clinical sessions were:

- Boosting of students' participation and interest in clinical sessions
- Reinforcement and practical application of theoretical knowledge in clinical sessions
- Improvement in communication with students, as well as in their participation in the subject's development

The results of this innovation educational project are divided in three parts:

1. The first part is the assessment of clickers' usefulness in the improvement of students' grades. In this case, clickers were used in a first session, at the beginning of the academic year, before students had attended any clinical session. A second clinical session using clickers was performed at the end of the academic year, and students' grades in the first session were compared with those of the final session. Figure 6 shows that only 5 students did not improve their grades with the use of clickers. These results are coincident with those of other authors [NT Stevens, JJ García Rodríguez], who also found that clickers could help improving students' engagement in large classroom environments as well as enhance the learning experience, and that they are received positively by medical students.

2. The second part of the results is the answers to the anonymous questionnaire with closed questions carried out between students, through the virtual classroom. This anonymous questionnaire had a section for students' suggestions, to improve the use of clickers in coming academic years. We think that questionnaires must be anonymous, as the aim is that students could express their opinions and suggestions freely (Figure 7). These results are similar to those of another study with Dentistry students [KM Satheesh], who were also satisfied with the use of clickers.

3. The third and last part of the results is the teachers' answers to the anonymous questionnaire with closed questions, in order to evaluate their satisfaction. As in students' questionnaires, teachers' questionnaires had a section for suggestions to improve the use of clickers in the coming academic years (Figure 7).

Figure 7 shows the answers given by students (blue) and teachers (orange). These answers express the high level of satisfaction of both groups with the use of clickers, as no student/teacher considered any aspect as negative. All the answers were positive or very positive, although a few students were not sure about what to respond. These same results were also found in another study with Dentistry students [C Llena], where teachers and students were highly satisfied with the use of clickers.
4 CONCLUSIONS

The use of clickers increased motivation and promoted participation of students in the improvement of the teaching-learning process. At the same time, it improved their grades as they learned from their own mistakes. Students' and teachers' opinions about clickers use were very positive.

REFERENCES


