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Perception of the use of teaching videos in preclinical training of Chilean dentistry students, 2013.

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Abstract: The use of educational videos is a valuable tool in preclinical dental training, as long as the pedagogical objectives match the appropriate learning stage. Accordingly, this teaching innovation suggests the realization of three types of didactic videos inserted in a specially designed pedagogical methodology for the preclinical cycle. After half a semester of use, quantitative results yielded a positive perception in relation to the promotion of evaluation criteria and conflictual tone development. On the other hand, perception of negotiation promotion and reaching consensus was divided into positive and negative. Both the analysis of frequency access to online videos and category formation clearly highlight the importance students give to demonstrative videos as well as the teacher's role when using them. By way of conclusion, it can be said that students considered educational videos, especially the demonstrative type, as a useful tool for developing conflictual tone and evaluation criteria, being always complementary to the role that the teacher who guides their preclinical training plays.

Keywords: educational video, teaching methodology, preclinical training

Percepción del uso de video didáctico en la formación preclínica de estudiantes chilenos de odontología, 2013.

Resumen: El uso del video didáctico es una herramienta valiosa en la formación preclínica del odontólogo, siempre y cuando logre hacer coincidir los objetivos pedagógicos con la etapa de aprendizaje adecuada. En esta línea, esta innovación docente plantea la realización de tres tipos de video didácticos insertados en una metodología docente especialmente diseñada, en el ciclo de preclínica. Luego de un semestre de utilización los resultados cuantitativos arrojaron una percepción positiva en relación al fomento del desarrollo del criterio de evaluación y tono conflictual, mientras que la percepción del fomento de la negociación y toma de acuerdo estuvo dividida en positivas y negativas. Tanto el análisis de frecuencia de acceso a los videos en línea como el levantamiento de categorías dejan de manifiesto la importancia que le dan los estudiantes a los videos demostrativos como también al rol docente durante su utilización. A modo de conclusión se puede decir que los estudiantes consideraron al video didáctico, especialmente los de tipo demostrativo, como una herramienta útil para el desarrollo del tono conflictual y criterio evaluador, siendo siempre complementaria al rol docente que guía su formación preclínica.

Palabras clave: video didáctico, metodología docente, formación preclínica.

Introduction.

The current challenge of Dentistry Schools, especially at preclinical level, lies in developing meaningful and relevant learning for students. This need has generated qualitative changes in content and didactics associated with the learning process in the already mentioned cycle¹⁻². In response, teaching innovations aim to include the creation of mental representations to encourage content integration, transfer and evaluation capacity³, betting on deep learning within the classroom dynamics. During the preclinical period, these representations enable students to take authentic tasks in order to encourage the bond with their learning⁴.

The best suited pedagogical resource to create mental representations is using educational or teaching videos. This rich resource offers various possibilities and combines information multisensoriality and complementarity, considering motivational and sensitive factors⁵.

In general, it is defined as a teaching tool to facilitate the learning process. It is made up of four main components: support material, content, symbolic way to represent the information and objective or educational purpose⁶. Among the different types of educational videos, those playing a role in motivation, information assessment or transmission stand out⁷. According to Kuomi⁸ there are those with composition ability, animated diagrams, visual metaphors, temporal compression, situation juxtaposition and procedure demonstration by experts. In addition, they can be produced or parts can be removed and reused from external sources especially for such purpose.

In dentistry, there is a tendency to use videos which have a demonstrative role and show the technical steps of a procedure to facilitate its later implementation⁹⁻¹¹. However, results are not always as expected, since they do not reveal significant differences in learning achievement and, at the same time, the effort on making the piece produces frustration in

the work team⁹. This is given mainly because of failures in the pre-production stage and lack of clarity about the educational aim. In these cases, all teacher expectations tend to rest on the video as an audiovisual piece in itself and not on the didactics, which determines the use of videos in a specific stage of the learning process.

Therefore, from an educational point of view, it is essential to know what the stages of the learning process are, to identify them and achieve an efficient intervention with the audiovisual material.

Among the learning stages, the learner's prior knowledge activation can be highlighted. It allows for needs and shortcomings awareness, determining what the student needs to learn¹². At this stage, the tutor generates a cognitive conflict that the learner should be able to solve. Once the challenge to resolve the conflict has been accepted and the needs have been identified, cognitive negotiation and consensus begin. To do this, the facilitator must mediate using a suitable conflictual tone to enable the student to understand the new information and build up his learning. Only that way, the student can appropriate knowledge, constantly assessing the new actions that are incorporated to his professional training¹³.

Given the above, it is interesting to propose the use of didactic videos at preclinical cycle level, by selecting the learning stage to intervene and the type of video to use.

Considering the above, the overall objective of this study is to determine the students' perception of the use of teaching videos in different stages of the learning process. Specifically, it aims to determine the students' perception regarding the use of teaching videos in conflictual tone regulation, negotiation and consensus promotion and evaluation criteria development.

Materials and methods.

This innovation, framed within a research action, aims at a general course improvement and has assumed that the students' perception regarding the use of teaching videos in different stages of the learning process will be positive. To be considered as a potential formative benefit, this innovation should include all undergraduate students from the subject Oral Rehabilitation I at the Faculty of Dentistry in the Universidad del Desarrollo as the target audience. To finally be included in the formal program, it was required to implement evaluation and approval from the Career Coordination Department and the Teaching Development Center of the University. The selected course is theoretical-practical and taught in the fifth semester with a participation of 180 students. At cognitive level, the main feature of the students who come to this

cycle is that they have developed memorization capacity. However, understanding and assimilation of technical procedures were difficult because of the shortage of mental representations related to these contents. From a motivational point of view, this subject is highly receptive since it represents their first approach to dental rehabilitation.

The selected methodology was of a mixed nature because it is expected to get a holistic view of the students' opinion towards the teachers' proposal. This type of methodology enriches both data collection and its subsequent analysis¹⁴. Among its benefits, it is considered the offer of a more accurate and complete perspective of the phenomenon to be studied. Also, it presents quantitative generalization and qualitative understanding, integrating the power of measurement to the closeness of the phenomenon.

From a quantitative view, the students' perception was determined using a five-level Likert Scale questionnaire. The dependent variables associated with the specific aims of the study were perception of the conflictual tone, negotiation and consensus and evaluation criteria development when using teaching videos. Therefore, the questions for the instrument emerged from indicators associated with each of these variables. Experts' criteria was used to validate question construction and, before the interview, it was conducted a pilot test to refine and get the final instrument. Responses were analyzed using simple statistics to define frequency percentage.

In addition, numeric frequency access was determined for the different types of videos on the Moodle platform in order to discover the most visited ones.

From a qualitative point of view, relevant categories arising from students' perception were collected by means of two structured questions carried out in a written interview.

For this experiment, the main subject development lines were identified and three types of videos associated with each one of them were created. The audiovisual material corresponds to the type of situations juxtaposition, temporal compression and demonstration. The goal of the first one is associated with information transmission and debate promotion. Its production was characterized by developing integrative questions to be answered by a panel of experts and supported with explanatory images.

For temporally compressed videos, the expected objective was to transmit information and promote content integration. Their main characteristic is to condense the technical procedures in time for incorporating more complex graphic effects and clinical messages to reinforce the visual message without voice.

The demonstration type of videos was differentiated

according to their goal of information transmission or evaluation. For the information transmission ones, the complete procedure of selected techniques with the explanation of the expert who executed them was recorded, emulating the traditional demonstrations carried out in the practical sessions. For the purpose of evaluation, short sequences of the different steps of the techniques previously demonstrated with or without errors in their execution were registered.

For all of them, teachers structured didactic activities associated with the use of videos, such as free access to an online platform, during the work period in classroom and during practice.

After use in the classroom theoretical modules, all videos were posted on the MOODLE platform for all existing courses at the University in order to be freely consulted by students before or during practice.

In addition, the audiovisual pieces were loaded in the tablets used by teachers during the practical activities for consultation or guiding the students during their practice.

All data collection instruments were applied at the end of the semester to not distort the information.

Results.

With regard to inquiries associated with the variable conflictual tone, 76.6% of students strongly agree with the statement *"It supports content integration"*, a 15.5% agree and a 7.9% does not know. All of the answers to the question *"It facilitates understanding of the content"* were positive, yielding an 87.2% who strongly agree. The question *"It helps to understand the teacher's speech"* reported a positive perception with a 96.4%, the strongly agree option representing a 69.4%. The question *"It facilitates understanding of clinical procedures"* scored a 100% of strongly agree. Figure 1 shows frequency distribution for conflictual tone development perception and details of the results.

In relation to the variable negotiation and consensus, all of the questions yielded positive and negative perceptions. Nevertheless, the statement *"It supports reaching consensus in the questions asked in class"*, which presented a 47.7% of negative perception, stands out; a 41% disagreed and a 6.6% strongly disagreed. *"It helps unify clinical criteria"* and *"It facilitates discussion in class"* presented the same percentage of 16.6% in disagreement, with a 71.1% and 75% of positive

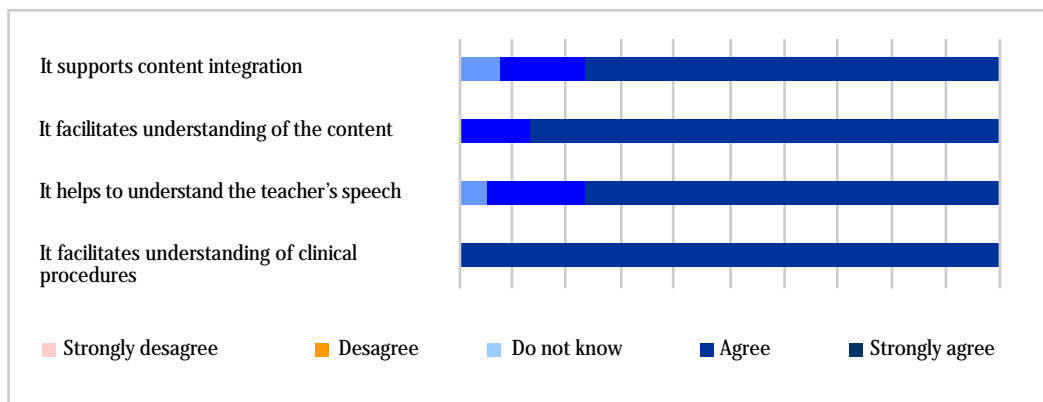


Figure 1. Perception frequency of conflictual tone development

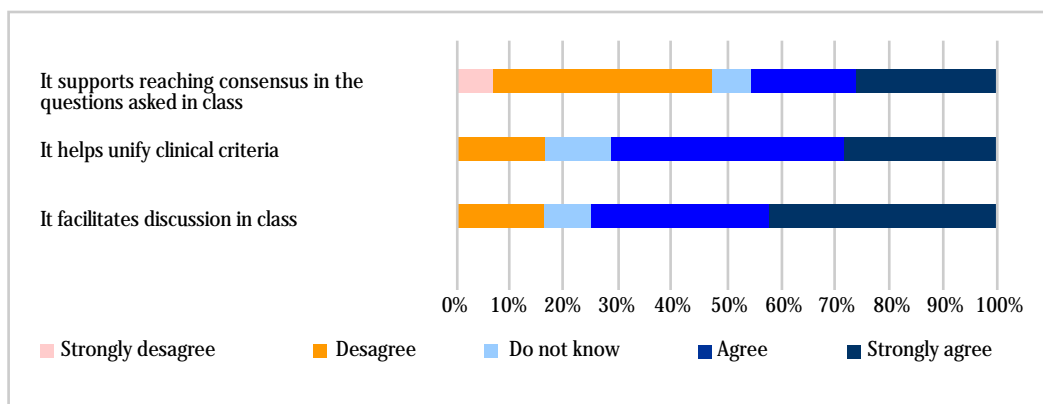


Figure 2. Perception frequency of negotiation and consensus development

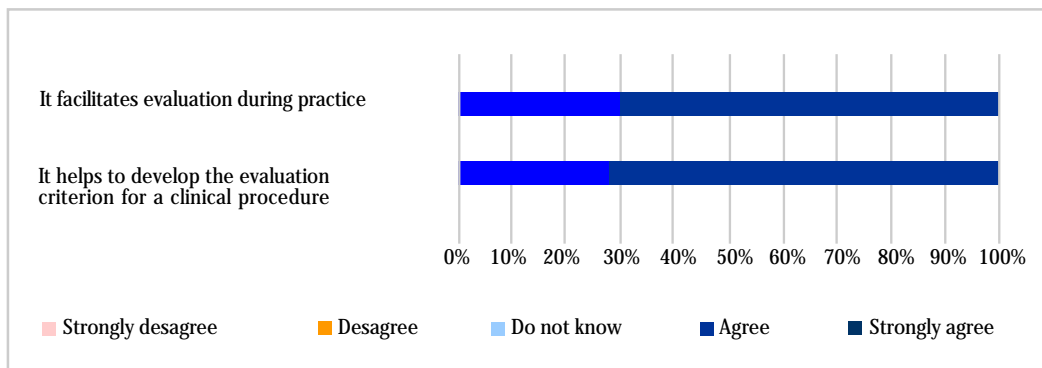


Figure 3. Perception frequency of evaluation criteria development

perceptions respectively. Figure 2 shows the breakdown of the results for the frequency distribution of perception of negotiation and consensus development.

For questions related to the evaluation criteria, the perception was 100% positive, 72% strongly agree, and 70% for the questions *"It facilitates evaluation during practice"* and *"It helps to develop the evaluation criterion for a clinical procedure"* respectively. Figure 3 shows the frequency distribution for perception of the evaluation criteria development.

When analyzing the frequency of visits to the Moodle platform for the different videos, data were the following:

Evaluation videos:	30 visits
Demonstration videos with an expert:	168 visits
Demonstration videos with graphics:	457 visits
Videos for conceptual integration:	158 visits

Qualitative analysis conducted for the responses obtained in the written interview with semi-structured questions allowed the authors to define the following relevant categories. Regarding the question: *"In your opinion, what are the benefits contributed by the use of videos?"*, these categories were identified: technique understanding and applicability. For the question *"What do you think in regard to how the videos were used?"*, the relevant categories are linked to: motivation, teacher's role, participation degree and technical aspects.

Discussion.

While educational videos are considered as a seductive⁵ and useful tool for learning⁷, there is not always clarity about the stage in the learning process they must be used in or the type of video to select. For this initiative, before investigating achievements in learning, the students' perception of the use of three types of training videos in three relevant stages of the learning process was investigated.

The results showed a clear preference for the use of the demonstrative type of videos, specifically for information transmission, in conjunction with another research showing students' inclination towards using videos in the practical rather than the theoretical plane¹⁵⁻¹⁶. This is coherent with the positive results for the questions associated with the conflictual tone development. Procedures display, reinforced with text or narrative creates a common language and shared meanings. This will obviously facilitate the tone development, from where the tutor and student will be able to communicate and understand each other to move forward in the learning process. The complexity of the oral language to explain technical activities or situations is remedied by the visual language, giving the possibility to create a meaningful and relevant common conceptual basis. In addition, it reinforces the authentic tasks concept, where the more applied the contents are, the easier the student will retrieve the information and will be the most motivated to attain learning¹⁷.

Regarding perception of the evaluation criteria development, although the response was a 100% positive, the frequency for using evaluation videos was much lower than for the ones corresponding to information transmission. This may relate to the explanation and analysis of the evaluation videos carried out during classroom work. This activity allows the student to feel satisfied to understand what is correct or incorrect after observations, comparisons and explanations made by the teacher. Students seem to associate evaluation with goal achievement, rather than with the ability to have an informed opinion to allow them to participate in a discussion or debate. The above is reaffirmed by analyzing the students' perception related to questions associated with negotiation-consensus. There are a significant percentage of students who adopt a passive attitude during classroom work, pursuing superficial learning conditioned by an extrinsic motivation¹⁸. For them, debate generation or consensus is not relevant; therefore, audiovisual materials are not significant. This

triangulates with the relevant participation degree category, raised from the comments which manifested the preference to visualize the material autonomously without the teacher's pressure, to need teacher's questions to understand and take advantage of the content. It is important to know this fact because it shows that while evaluation videos are a contribution to the evaluation criteria development, they will be more used within the classroom period and not as a self-access tool, contrary to what is perceived for demonstrative videos for information transmission.

It is also interesting to reflect on the importance given to the teacher's role by the students, as seen in the category teacher's role. As Prieto *et al* summarizes¹⁹, the ICT use and especially teaching videos in this case, should not be considered in isolation. They must be integrated to activities where meanings and implications of the presented information can be shared with the teacher. The educational

video is considered more as an information container, a tool that enhances teaching competencies²⁰ and encourages a classroom environment where the student accepts the learning challenge.

In conclusion, the use of didactic videos is perceived as a useful tool by the students, especially the demonstration type which allows sharing meanings and promoting an appropriate conflictual tone between the student and the teacher. However, the pedagogical challenge is projected in the production of pieces that, beyond facilitating technical training focused on achievement, promote reflection and deep understanding of a process. Thus, the specific challenge is to achieve audiovisual tools, which being anchored in an appropriate methodology and aware of the students' diversity, enhance teaching skills for a participatory dynamic in the classroom to promote deep thought and, therefore, quality learning.

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