

Digital technology as a tool for academic tutoring in dental school during the COVID-19 pandemic

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ABSTRACT

This article aims to report the academic tutoring experience by remote and synchronous means in the practical subject of preclinical Endodontics in dental school, during the COVID-19 pandemic period. It is an experience report, of descriptive character. The experience of the academic tutoring in the subject of Endodontics took place through *Collaborate*, digital resource from the *Blackboard* platform, which enabled interaction with students, making it possible to carry out reviews, surveys, self-explanatory videos exposition, clinical cases discussion, mental maps and descriptive tables construction, clarification of doubts and direct communication between tutor and student, through camera, audio and chat. All planned activities for remote teaching were carried out and tutoring was of great importance for the teaching-learning process of both tutor and students.

Descriptors: COVID-19. Dentistry. Endodontics.

1 INTRODUCTION

In Dentistry graduation, students have an education based on theory, in the classroom, and also on practice, in laboratories (preclinical procedures) and in clinical care¹. However, not all students are able to assimilate well all the theoretical and practical contents worked by the professors in the classroom, requiring extra support from tutors who have already appropriated from the class' contents².

Tutoring is an optional activity offered

by higher education institutions to more advanced academics in the formation path, who have affinity with some subject, and thus become responsible for providing assistance to other students, under the direct supervision of a professor. In addition, the academic experience as a student-tutor is indispensable for a future teaching career, as it is through this first contact that the academic has the prior opportunity to have the responsibilities and autonomy of decisions, when in the absence of the professor³.

Understanding the importance of preclinical subjects in dental school for future assistance in school clinics and subsequent professional performance, it is considered essential to have tutors' support in the subjects' theoretical and practical activities, stimulating and instructing students in improving their theoretical study and technical execution¹.

However, in view of the pandemic resulting from the outbreak of COVID-19 and the need for social isolation, the Ministry of Education (MEC) published the ordinance No. 343, of March 17, 2020, which allows Educational Institutions to replace face-to-face classes with digital classes for a period of 30 days. With the persistence of the increase in cases in Brazil, the Ministry of Education, through Ordinance No. 544, of June 16, 2020, extended its efficacy until December 31, 2020^{4,5}.

In the face of such a situation, emergency measures were taken by several higher education institutions, such as the use of technologies that would allow remote classes so that activities would not be paralyzed and students would not be harmed in their teaching and learning process⁶. Highlighted among these technologies are the Virtual Learning Environments (VLE), which are teaching mediating platforms that allow the sharing of content at different times and spaces⁷.

In this scenario, the João Pessoa University Center (UNIPÊ), uses the *Blackboard* digital platform, a virtual learning environment, having as one of its tools the *Blackboard Collaborate*, which provides to all students of the institution the possibility to follow classes in remote and synchronous ways. It is worth mentioning that not only mandatory and elective subjects were maintained remotely, but also other activities, including tutoring.

Given the above, the present descriptive

study, of the experience report type, aims to describe the tutoring experience in the preclinical Endodontics subject, at UNIPÊ, through the *Blackboard Collaborate* remote technology during the pandemic period.

2 EXPERIENCE REPORT

Preclinical endodontics is a fourth semester curricular component at UNIPÊ dental school. Classes are divided into expository theoreticals, in the classroom using a multimedia projector and in laboratory practices. Endodontic treatment simulations are performed on artificial teeth, set up on a specific mannequin coupled to a patient simulator fixed on a bench. The course load totals 120 hours, consisting of 40 hours of theoretical classes and 80 hours of practical classes.

During the new coronavirus pandemic, classes became remote and synchronous, during the course hours, using the *Blackboard* platform and the *Collaborate* resource, which can be accessed through computers, tablets or cell phones, as long as they are connected to the internet. Initially, synchronous virtual classes started replacing only theoretical classes, being taught by the same professors who started the course in person.

To innovate is necessary so that it is possible to adapt to different situations, such as the need for social isolation in the middle of the pandemic, and new technological tools must be applied to dental education⁸.

Technology plays an important role in education and its evolution in recent years has enabled synchronous communication, in which students and professors communicate simultaneously, through videoconferences. Although there is evidence of their positive points, VLE are not able to fully compensate for face-to-face classes, being necessary that there are traditional clinical practices, so that the

students can reproduce the entire theoretical teaching-learning process, in person⁹.

Collaborate is a collaborative feature from *Blackboard* of synchronous nature, that is, used in real time, in which the subject's moderators schedule virtual meetings⁷. In this perspective, it is worth highlighting the difference between remote classes and distance education. The first occurs synchronously, in which professor and students interact in real time, and questions can be resolved at that exact moment through video, audio or chat. The second, on the other hand, refers to asynchronous classes, in which contents are already prerecorded, not requiring a predetermined schedule.

Intending to further ratify content and assist those who were unable to assimilate it, the curricular component of preclinical endodontics is supported by two tutors.

Selection process for tutoring consisted of two consecutive phases: theoretical assessment, consisting of a written test with 12 objective questions, consisting of topics compatible with the curricular component, being considered classified for the next phase students who obtained a grade equal to or higher than 7.0; and practical assessment, in which students were exposed to some clinical situations, and talked about the correct approach and what steps should be taken in the treatment, in addition to questions about the instruments used in the subject.

At the end, a simple average was calculated: $M = \frac{N1+N2}{2}$, where N1 corresponds to the average of the scores obtained in theoretical and practical assessments and N2 the score obtained when attending the curricular component. Thus, the two students who obtained the highest results in the simple average of the selection process were

considered approved.

The tutor approved as first place in the subject is granted a monthly student incentive during the tutoring period, being granted through tuition discount for the beneficiary student after the completion of the first month of activities.

During the social isolation period, tutors were able to use *Blackboard Collaborate* as a communication tool. It has several resources which refer to instruments used in the classroom, such as the whiteboard option (figure 1), used to draw or take notes, and can also be used by students, when allowed in the settings. When using this feature or sharing files (slides, .pdf files or images), some tools become available (figure 2).

These tools permit edits during the live session, being a useful resource, as it allows one extra form of interaction between student and tutor/professor, permitting the student to ask questions or express ideas and the professor to redo the explanation in a clearer way, making it so that the remote class looks more like a face-to-face class.

Another interaction resource is the "raise hand" option (figure 3). When selecting this option, a sound is emitted to the moderator, notifying as soon as someone in the room wants to interact through chat. This feature allows students' doubts not to go unnoticed by the moderator and to be clarified at that moment.

Tutors underwent training carried out by the Dentistry course coordination prior to the first contact with the students. At that moment, it was possible to have access to the platform's tools and understand the step by step of the *Blackboard* operation. Other conduct guidelines were given by the coordination and professors of the subject throughout the semester.

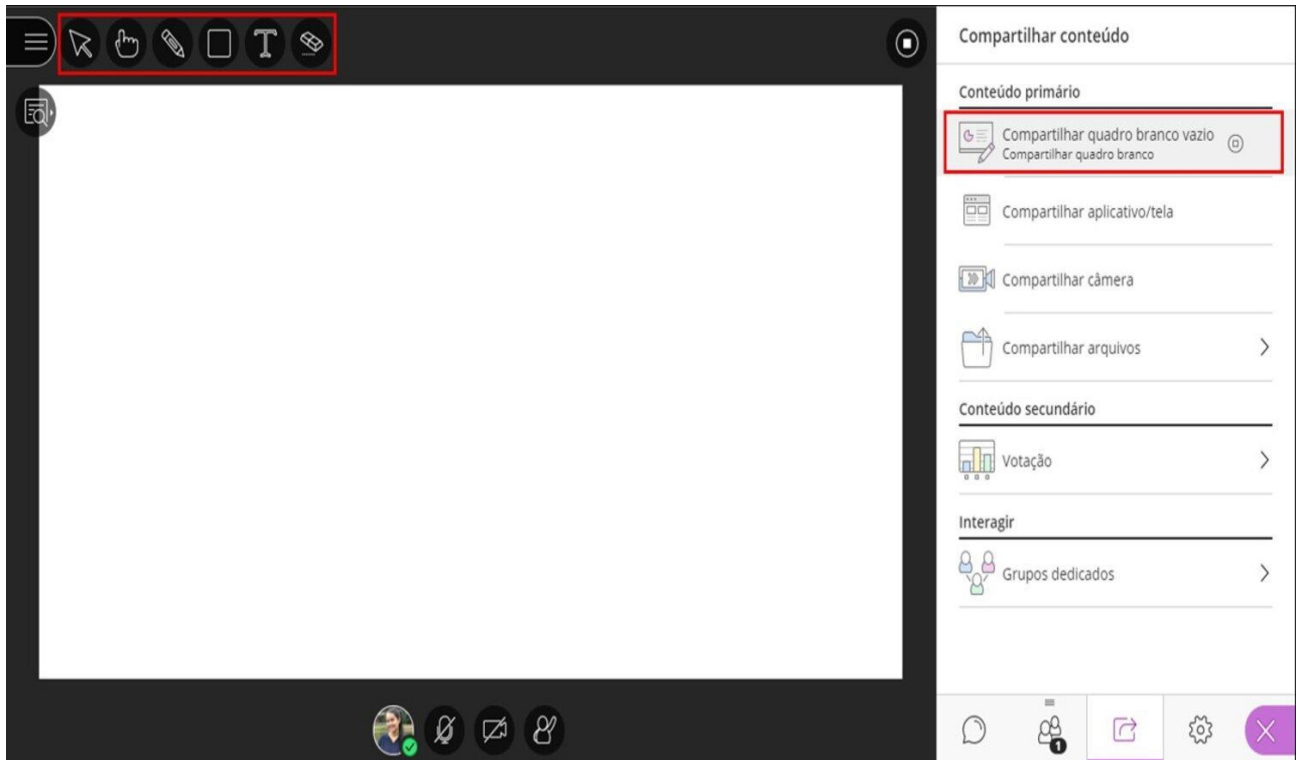


Figure 1. Whiteboard and tools

Tool	Description
Arrow	Used to select an object on the whiteboard, changing position, deleting or resizing what has been selected.
Pointer	Allows the moderator to point out the details of the lesson and participants to view the pointer.
Pencil	Used to draw freehand on files or on the whiteboard.
Shapes	Used to draw a rectangle, ellipse or straight line.
Text	Allows entering text.
Clean	This option undoes all edits made with the previously mentioned tools.

Figure 2. Blackboard annotation tools

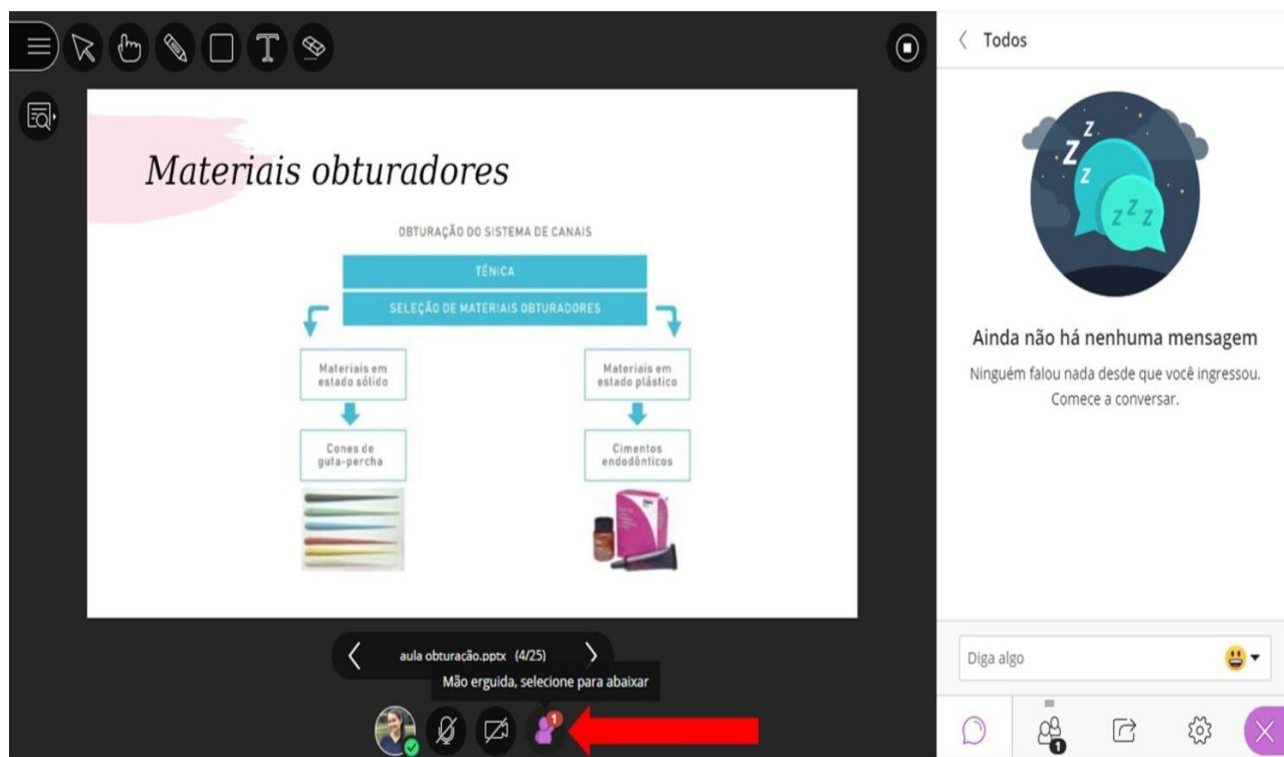


Figure 3. Raise hand resource

On the platform, the preclinical Endodontics subject has a virtual room (figure 4) with restricted access to professors, tutors and regularly enrolled students; it is in this environment where theoretical classes and tutoring take place. Access can be done directly, in which the student enters the academic portal, or through a link, made available by the moderators of the room (professors and tutors).

Thus, throughout the semester, students were accompanied by tutors during remote theoretical classes, as well as in additional moments at predetermined times. A WhatsApp group was created, an instant messaging application, which allows the sending of texts, audios, images, videos and documents, in addition to making free calls, as long as connected to the internet, with a free shift of classes or extra tutoring being fixed on other days, whether the students show a need.

Tutoring was carried out in order to

answer questions about the main contents in relation to which students felt insecure, carrying out reviews and resolving doubts through active methodologies. There was great interest from students in reviewing topics such as “Stages of endodontic preparation”, “Auxiliary chemical substances”, “Filling techniques”, “Diagnosis in Endodontics”, “Intracanal medicament” and “Treatment of teeth with incomplete rhizogenesis”.

Teaching materials used were visual resources as slides (figure 5) with explanations of the theoretical classes previously taught by the subjects's professors. Then, to ascertain the assimilation of the content by the students, polls were carried out using the *Blackboard* voting tool (figure 6), which allows choosing a question and the alternatives (multiple choice or yes/no), with the student being able to vote for the chosen alternative without previously viewing the response of the other colleagues. After all

members selected their answers, the result would become visible, showing how many people voted for each alternative, which were debated one by one, highlighting the correct statement.



Figure 4. Access to the preclinical Endodontics virtual room

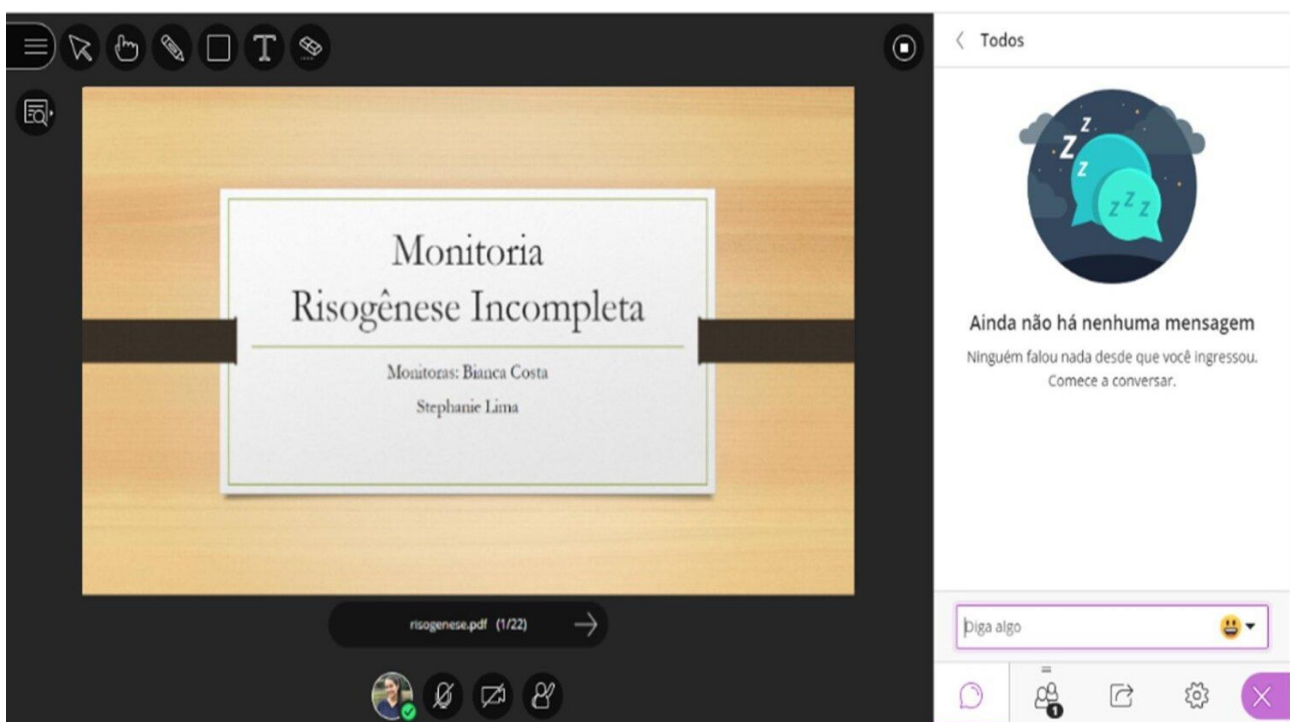


Figure 5. Slides, visual resource used during tutoring

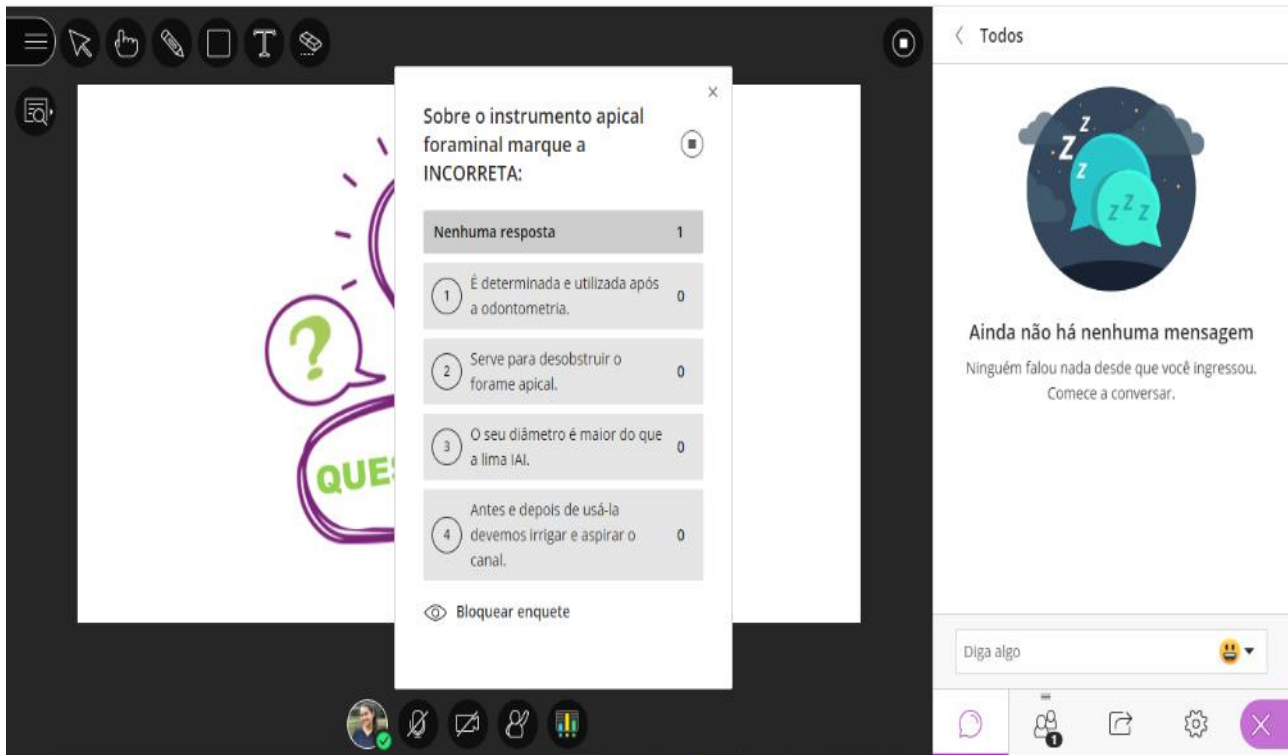


Figure 6. *Blackboard's* voting feature

In order to make tutoring the closest to practical classes in the laboratory, YouTube videos were selected to help understand the contents, demonstrating them “in practice”. Videos were shown using *Blackboard's* screen mirroring option (figure 7).

Another reinforcement activity carried out by the tutors was the production of a chart (figure 8), in real time, on the diagnosis of pulp and periradicular changes, with participation of the students. The chart was prepared in Word, also shown by mirroring the screen via *Blackboard* and later made available to students.

Another technique used to help with the fixation of the content and correlate even more with clinical practice, was the realization of clinical cases. In them, students discussed hypothetical cases, detailing the care protocol, evaluating the patient from the arrival in the

waiting room until the end of treatment. In this way, students are induced to think about how to make an anamnesis, appropriate physical and radiographic exams, as well as the diagnosis and planning to carry out the treatment in the most appropriate way for each patient, taking into consideration their individualities.

The *Blackboard* platform is very didactic and easy to work, allowing interaction between moderators (professors/tutors) and students, using microphone, camera and chat (figure 9). All participants have the option to activate/deactivate their device's microphone and camera, thus preserving their privacy (these options can also be deactivated by the moderator). Every activity is recorded by the *Blackboard Collaborate* itself, being available in the virtual room (figure 10), so that students can watch them again at any time.

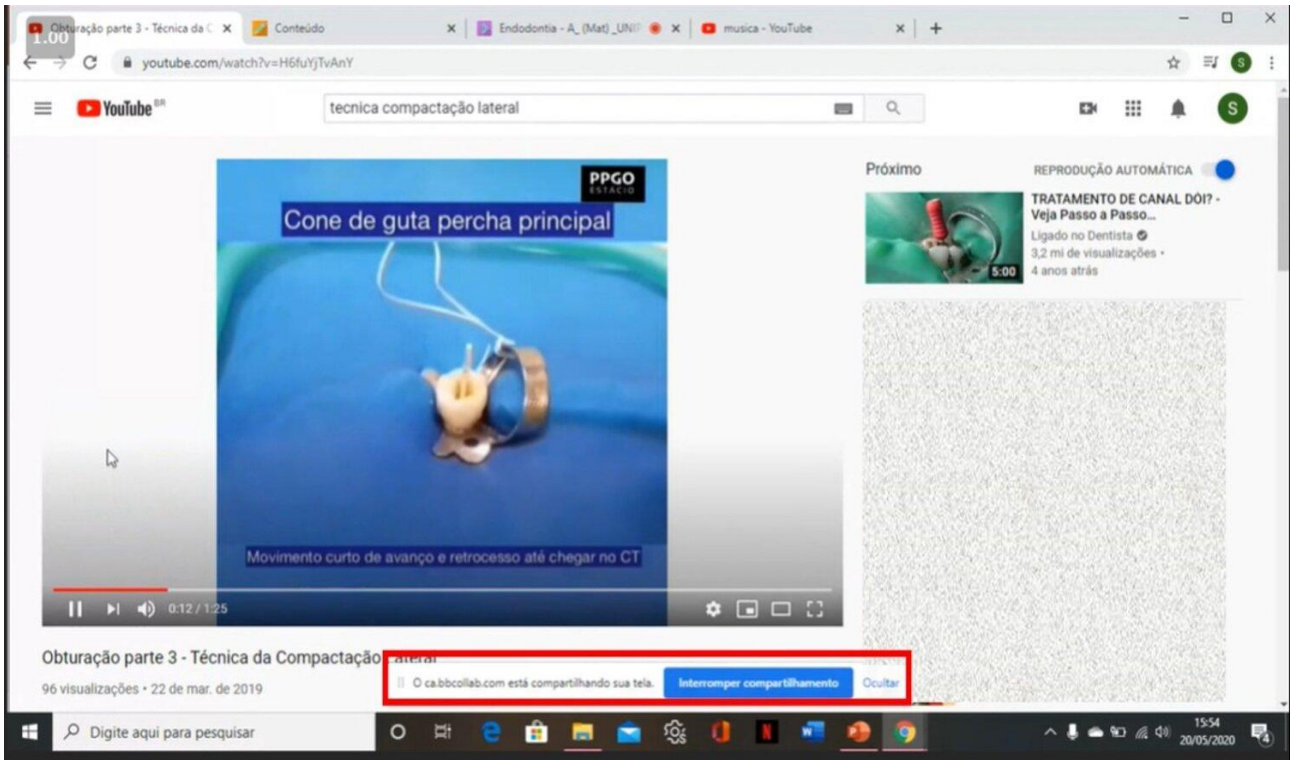


Figure 7. Mirroring YouTube through *Blackboard*

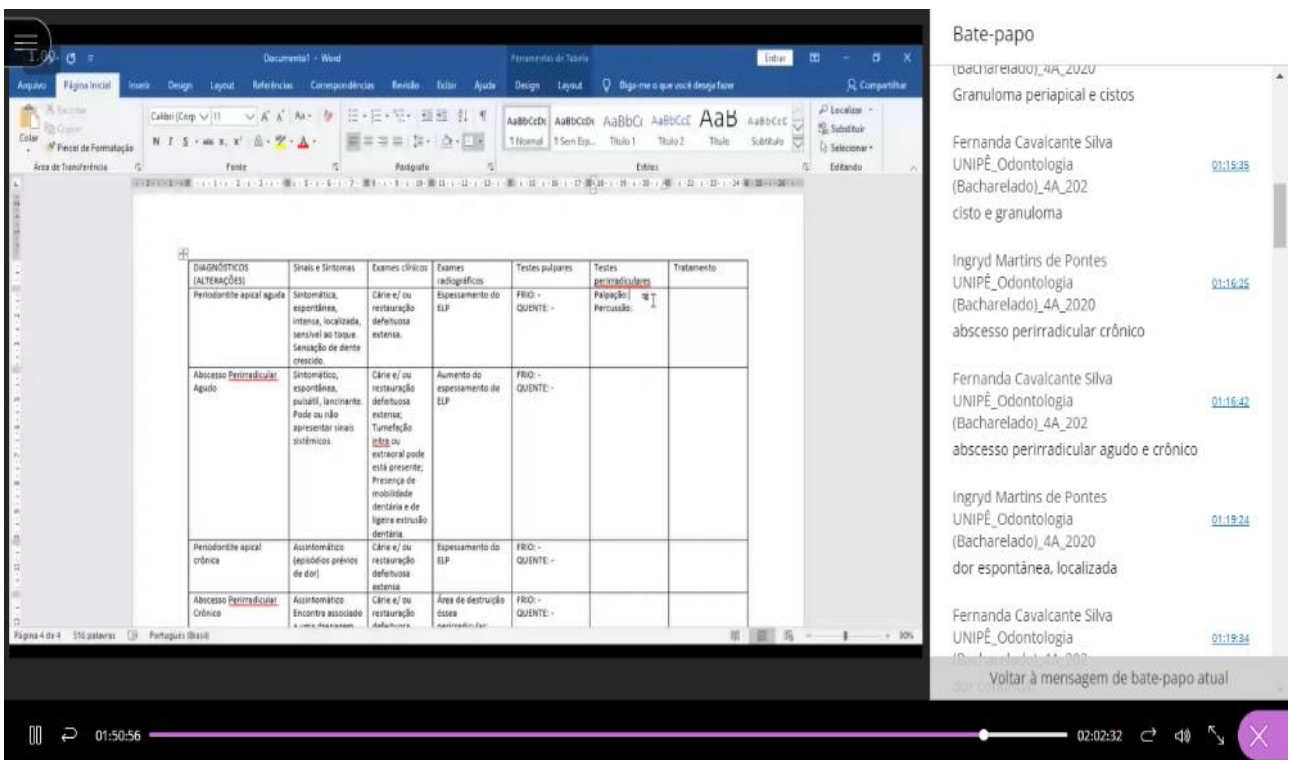


Figure 8. Mirroring chart production in Word

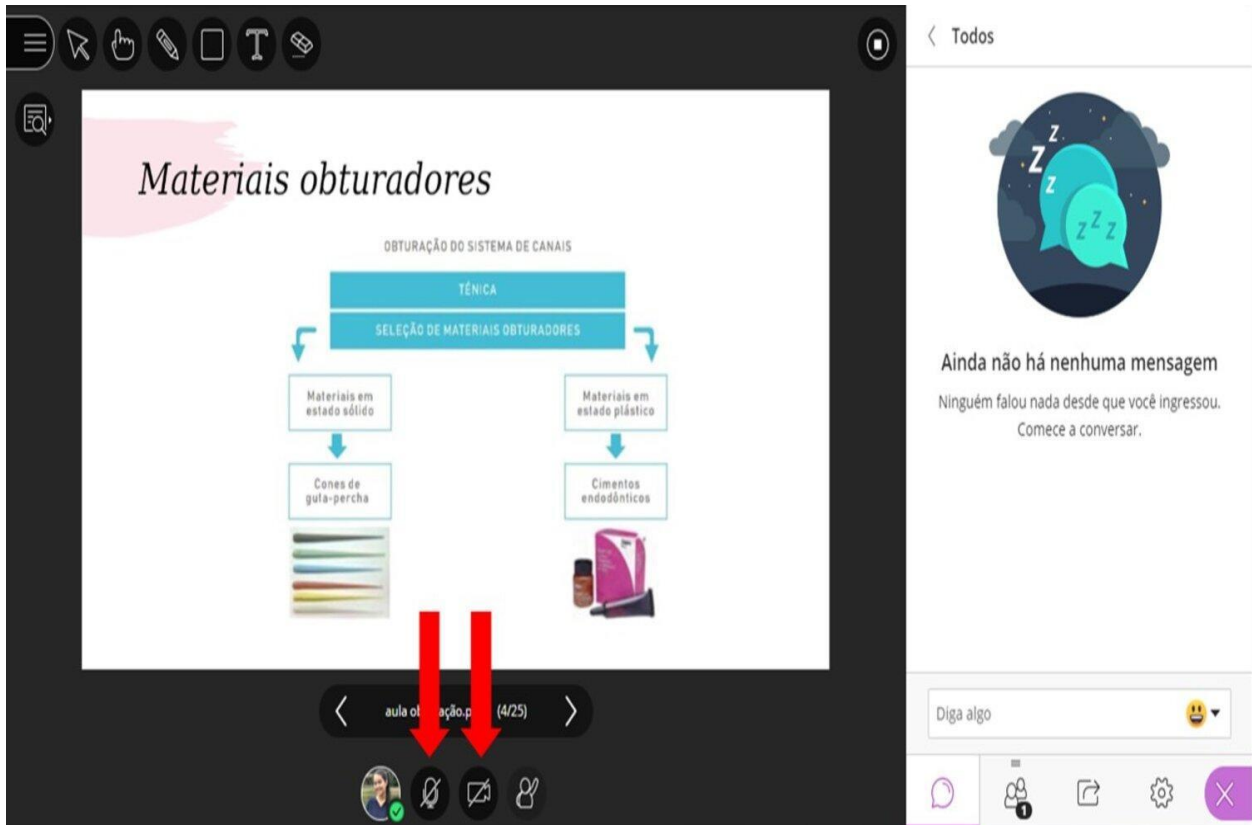


Figure 9. Camera and audio features disabled

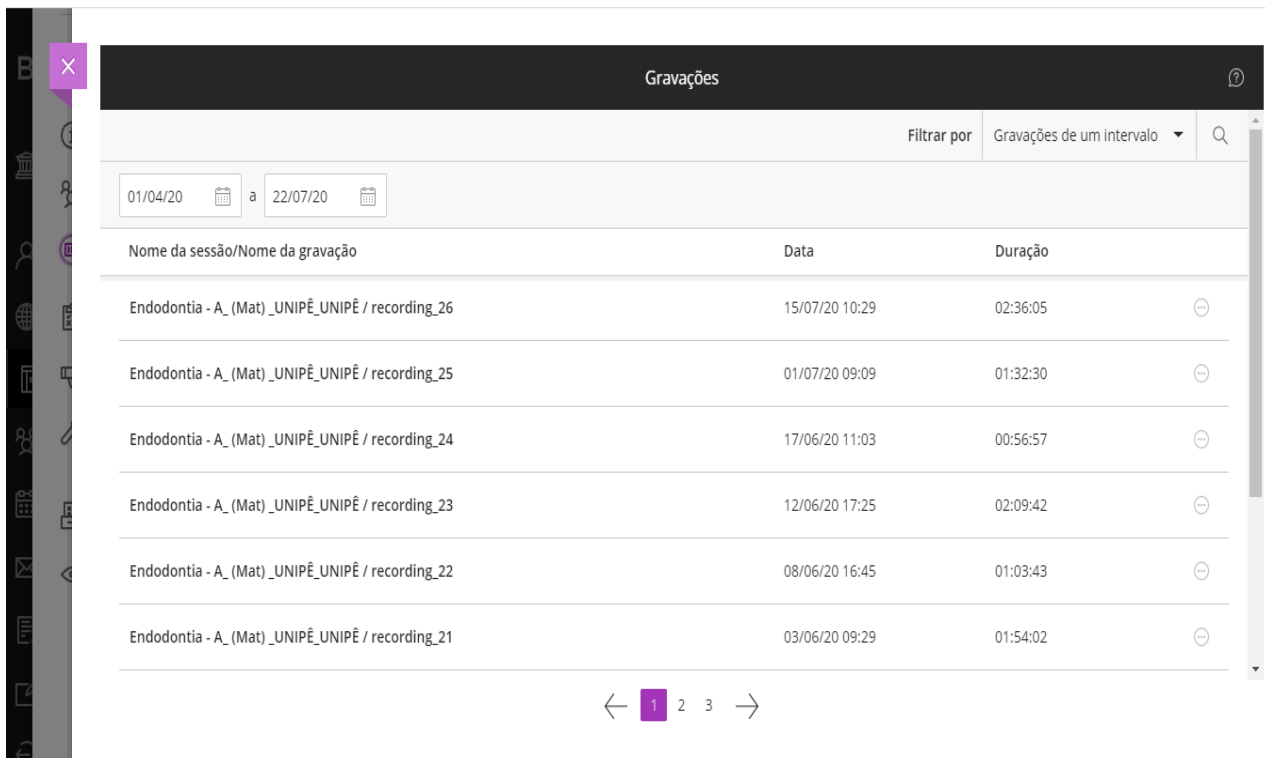


Figure 10. List of recorded classes and tutoring

In this way, the use of the digital platform during the period of social isolation is important, since it was from this technology that classes were able to continue. Thus, the tutoring experience study associated with the use of *Blackboard* is of great relevance, allowing a quantitative assessment of the performance of students regularly enrolled in the subject during the semester 2020.1. All enrolled students (n=30) were approved in the subject.

In this perspective, tutoring work during the pandemic period proved to be effective in contributing to the learning of students, especially those who had greater difficulties.

In a study carried out in Saudi Arabia, it was sought to evaluate the advantages and disadvantages of using *Blackboard* in medical schools at Taif University. Most participants expressed their satisfaction with the use of this tool, highlighting its organization and ease of use. However, one of the flaws of the tool is that it does not guarantee that the student is focused and not distracted by something. Another obstacle pointed out by many participants is that *Blackboard* is suitable for theoretical classes, not including practical activities¹⁰.

Positive and negative points of remote tutoring were assessed by the tutors and professors. Positively, the mediation between student, tutor and professor remained during the semester, with questions being answered more quickly through the virtual platform or communication application used. Tutoring also enabled and demanded skills from the tutor through remote means, not restricting the tutor's performance only to laboratory practices. Regarding the negative aspects, the absence of some students stands out, who complained of fatigue due to the prolongation of the pandemic period.

Desai (2020)¹¹ defends the shutdown of

school clinics as necessary, due to contamination risks. In addition, with the increase in the unemployment rate due to the pandemic, many patients will delay their visit to these environments and, as a consequence, dental students are unable to complete the requirements of the clinic.

At the end of the semester, the remote tutoring experience showed that, probably, evaluations carried out exclusively through virtual means are not the ideal way for healthcare students, as it was not possible to assess their skills in laboratory practice, having the need to go through these activities again when possible. However, within limits in which teaching is allowed during the pandemic period, the remote environment has been shown to be effective, since it allows students not to be totally removed from the theoretical contents, with the need to retake only the practical classes, in a future resumption of face-to-face activities.

To assess the impact of COVID-19 on the academic education of the students taken into consideration, it is intended to conduct a questionnaire to compare the results with students from previous years. However, this will only be possible when the semester ends and the current students take the practical classes, because only then will it be possible to measure their difficulties. In addition, students' experience with *Blackboard* will also be evaluated, taking satisfaction into account.

For Bennardo et al. (2020)¹², the COVID-19 pandemic brought permanent changes in the approach and training in Dentistry, with combined learning probably being the basis of future dental education, being interesting to evaluate the pedagogical effects of sudden changes due to isolation.

According to Antunes et al. (2019)¹³, the

tutor's role goes far beyond answering student's doubts, it represents to the tutor an attainable model of knowledge, showing that learning can be acquired by both, in the same position of students. Understanding that learning difficulties exist and that they are part of the process is essential, but it must also be understood that they can be overcome. In addition, tutoring favors a considerable interpersonal relationship between tutor and student, who, most of the time, feel more comfortable to ask their questions to the tutor, strengthening the security and confidence in his knowledge, also consolidating the desire for the tutor's teaching career¹⁴.

3 CONCLUSION

Despite the restriction of face-to-face classes due to the pandemic, it was not necessary to cancel classes, due to the possibility of remote ones. *Blackboard* was an extremely important tool so that all necessary classes and tutoring could take place, favoring learning.

Through the virtual environment it was possible to provide reviews, carry out questionnaires and answer questions in a synchronous and efficient way. This was only possible because student-tutors had free access, after training, to the subject room, enabling autonomy and a new experience for the tutor, allowing them to fulfill their already established functions before the beginning of social isolation. However, there were many challenges encountered during the tutoring activities, especially in view of the world's current scenario, it was necessary to adapt to the new reality with the use of digital platforms to develop the initially planned activities¹⁵.

At UNIPÊ, the entire pedagogical team and students had to adapt to the digital media already offered by the institution - *Blackboard* -

so that classes could continue. Despite the initial difficulty, the experience enabled a new view on remote teaching, using resources we would never have imagined using, but that were always available for students and professors and that could have been used before isolation as a resource for extra classes, tutorings and meetings, for instance. Thus, this technological aid will remain as legacy, as something to be maintained during normal semesters to complement and assist theoretical classes and face-to-face tutoring.

RESUMO

Tecnologia digital como ferramenta na monitoria acadêmica do curso de Odontologia em tempos de pandemia COVID-19

Este artigo tem como objetivo relatar a experiência da monitoria por meio remoto e síncrono na disciplina prática de Endodontia pré-clínica do curso de graduação de Odontologia, durante o período de pandemia COVID-19. Trata-se de um relato de experiência, de caráter descritivo. A vivência da monitoria na disciplina de Endodontia se deu por meio do recurso digital *Collaborate* da plataforma *Blackboard*, que possibilitou interação com os alunos, sendo possível a realização de revisões, enquetes, exposição de vídeos autoexplicativos, discussão de casos clínicos, construção de mapas mentais e tabelas descritivas, esclarecimento de dúvidas e comunicação direta entre monitor e aluno, através de câmera, áudio e *chat*. Foram realizadas todas as atividades planejadas para o ensino remoto e a monitoria foi de suma importância para o processo ensino-aprendizagem dos monitorandos e do monitor.

Descritores: COVID-19. Odontologia. Endodontia.

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