

Classroom Methodology in Synchronous Learning Spaces in Graduate Programs

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ABSTRACT

Having been declared a pandemic in the year 2020 by the World Health Organization, a state of sanitary emergency was established in Colombia and the government implemented different strategies to mitigate the spread of the virus. In accordance with the above, public and private universities suspended the development of on-site classes. In the case of the Universidad Francisco de Paula Santander Ocaña, this suspension took effect on March 15, 2020. In view of this situation, the postgraduate programs continued with the development of remote face-to-face classes supported by ICT tools, for which a methodology structured in three phases was implemented: awareness (prior to the development of the classes), accompaniment (during the development of the classes) and measurement of perception (after the class). It was found that the methodology allowed the adequate development of the entire curricular component of the program while maintaining its quality conditions.

INTRODUCTION

During the pandemic period, nearly 1.6 billion students of all ages were affected by the contingency measures established in all countries; therefore, in many cases, it was not possible to attend schools in person. This implied a search by the academic community to establish alternative forms of teaching-learning environments (Rodríguez, 2021). In general terms, the global pandemic forced that in the period from 2020 to 2021 new challenges were assumed for technology in various environments such as work, health, education and interpersonal interactions (Mendiola, et al., 2020) (Fernández, et al., 2021). This is why this period has been coined the expression "the great year of the technological leap" since there was a massive and immediate shift to virtual environments, supported by the use of new technologies, the internet of things and

virtual and augmented reality (Vergara, 2021) (Ramírez, 2021) (Ramírez, 2021).

Literature review

According to the analysis conducted by the summit of Latin American universities in the year 2021, to establish the use of digital platforms used by universities in Latin America during the pandemic, it was found that Moodle was the main platform for institutional use with 60%, followed by Google Classroom with 30% and Blackboard with 7%, and 3% used other platforms of which 21% were the product of the institutions' own developments (Gómez, et al., 2020). At the methodological level, the mechanisms employed by the universities consisted of providing facilities for working at home, making academic calendars more flexible, and evidently adjusting teaching and learning processes based on new pedagogical strategies and resources that would allow the

development of classes in synchronous learning environments (Peñuelas, et al., 2020) (García, et al., 2021) (García, et al., 2021). Likewise, the institutions were concerned with acquiring and improving technological platforms to develop their mission processes, which in terms of administrative and teaching staff involved training in the use of these tools. Additionally, it was necessary to strengthen the channels for socioemotional support to workers and students to face the changes and restrictions of the pandemic. Finally, an important aspect was the management of enrollment, which in large part involved an economic stimulus and support for the payment of tuition (Arriaga, et al., 2021) (Giannini, 2020).

At the local level, the graduate programs of the Universidad Francisco de Paula Santander Ocaña, had to accept the institutional measure of suspension of face-to-face classes since March 16, 2020, which required the implementation of a new work methodology to develop classes and the accompaniment of students through synchronous spaces supported by video conferencing platforms. Therefore, as of that date, remote class sessions and support activities were implemented, both for students and professors, to continue with the curricular development of the programs.

Research questions

In view of the emergency situation declared in the country and the need and responsibility of the Specialization program to maintain quality conditions, the following questions were raised:

¿What pedagogical strategies could be implemented in synchronous classes through platforms that facilitate communication with audio, sound and text and the development of activities in virtual platforms such as Moodle?

¿Does the implementation of classes in virtual learning environments affect the quality conditions of the program?

Method

The development of the implemented methodology was structured in three main stages, which are indicated below:

1.1. Strategic aspects.

1.2. The fundamental aspects of the strategy consisted of:

a) First aspect: during the development of the class session the teacher has a 100% accompaniment using the Google Meet platform and the institutional platform called UVirtual, in the latter, prior to the development of the classes, the information on the topics to be addressed in the class is available. Additionally, the development of the class session is moderated in intervals of an hour or an hour and a half, with intermediate breaks of fifteen or twenty minutes.

b) Second aspect: the development of the activities that correspond to the student, without the teacher's accompaniment and those with the teacher's presence, were coordinated and delivered through the platform; in which it is possible to assign a time frame for delivery, upload the file and perform the feedback and respective grading of the activity.

c) Third aspect: the attendance to the synchronous learning spaces and the use of the virtual platform and bibliographic resources available to support the subject are controlled.

1.2 Implementación de la metodología

As mentioned above, the methodology has 3 stages or moments for implementation, corresponding to:

A preliminary stage in which the actors of the teaching-learning process are trained on the dynamics for the development of classes in virtual and synchronous learning spaces, for which the program developed manuals and instructions to indicate the operation of the platforms, although it is important to note that in the case of the UVirtual platform, both teachers and students had already had the opportunity to work on it. In the meetings

with teachers, the different recommendations for the development of classes were mentioned, such as the breaks between sessions, the use of audiovisual resources, the management of strategies and pedagogical resources and other relevant aspects regarding the management of the support platform for remote attendance, both the platform offered by the Google suite and UVirtual. Similar work was done with regard to students, emphasizing the use of the platforms, in addition to explaining the new channels of attention and assistance provided by university welfare. Subsequently, an induction and motivational talk was given in collaboration with the University Welfare office.

In the second stage, which corresponds to the execution, initially the work agendas were sent with the respective connection links through e-mails and instant messaging lines. The classes were developed through Google Meet, additionally, each meeting was recorded, such recording was shared by email and uploaded to the UVirtual platform along with the additional class material.

Finally, in the closing stage, and after the development of the first-class session, the evaluation given by the students regarding the methodology implemented, the platforms to support the presence and the aspects of methodology and pedagogy of the professor was measured. Based on this measurement, a process of feedback and implementation of improvement actions was developed, which were applied to the rest of the class sessions of each module.

1.3 Measuring instrument to assess the impact of the methodology

Using the "case study" methodology, having as object of study one of the graduate programs at the specialization level of the Universidad Francisco de Paula Santander Ocaña, information was collected through the implementation of two surveys applied to the three cohorts developed in the period of the pandemic.

The first survey measured the students' evaluation of aspects such as: tools used, class methodology, material provided, teacher-student interaction and support from the program.

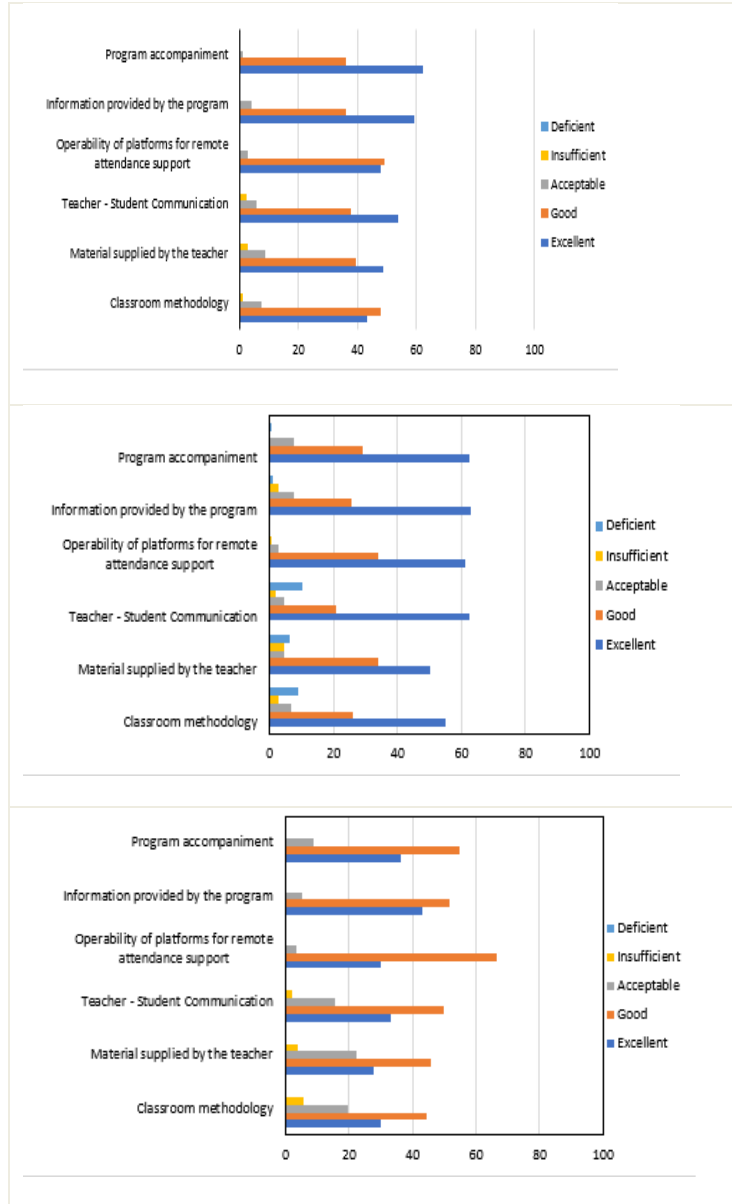
The second survey was developed at the end of the study cycle and collected information regarding the effectiveness of the methodology.

Results and Discussion

Once the university declared the cessation of face-to-face activities, the specialization program immediately implemented the developed strategy, taking advantage of the work that has been developed every semester with the teachers by having the courses standardized in the institutional platform. There were a total of 3 cohorts with which the strategy was implemented, the first cohort that developed its second semester at the beginning of the pandemic, the second cohort that developed 100% of its academic plan through remote sessions and the third cohort, which implemented a semester with remote face-to-face classes supported by Tic's tools and another semester in which alternated between remote face-to-face and formal face-to-face - hybrid modality.

1.4 Measurement of the perception of program and teacher performance during the development of remote face-to-face classes supported with ICT tools.

This perception measurement was applied once the first work meeting of each subject was developed, allowing the evaluation of six aspects related to the methodology of work in remote attendance. Figure 1 shows the tabulation of the results of the perception of the students of the cohorts under study in the period of analysis, which corresponded to years 1 and 2 of the pandemic.



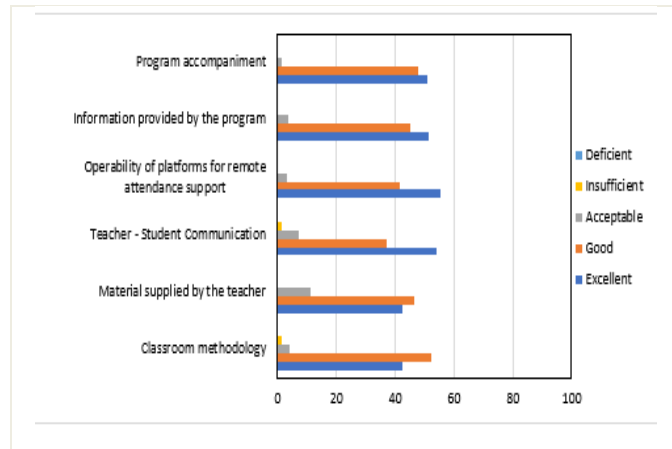


Figure 1. Student perceptions for aspects related to classroom performance in pandemic period - first measurement instrument: (a) first semester year one of pandemic (b) second semester year one of pandemic (c) first semester year two of pandemic (d) second semester year two of pandemic.

The results in Figure 1 correspond to the perception of three different cohorts of the same program, with which remote face-to-face classes were developed in synchronous scenarios supported by ICT's. Graph (a) corresponds to the perception of a cohort that attended one of the two semesters of the program with normal face-to-face classes before the pandemic and the second semester with remote face-to-face classes in the first semester of the year 2020. Graphs (b) and (c) correspond to the perception of a cohort that attended the two semesters of the program with remote face-to-face classes (second semester of 2020 and first semester of 2021) and graph (d) corresponds to a cohort that attended one of the semesters of the program with hybrid face-to-face classes (normal face-to-face classes were interspersed with remote face-to-face classes).

It can be seen that the cohorts that had classes with normal attendance, either before the pandemic or in hybrid modality during the pandemic, have an average perception of 94% between excellent and good for the six aspects analyzed. In the case of the cohort that developed all the curricular content of the program through classes with remote presence, without any physical interaction student-student or student-teacher, had a perception of 86% between excellent to good, a reduction of 8.5% and even in this cohort, unlike the other two, a perception with a rating between

insufficient and deficient of 7% was recorded for the first semester of the program. This led to the need to implement improvement actions such as increasing and improving communication channels with students, with greater interaction between the program and students and a more personalized follow-up with teachers. For the second semester of this cohort, this negative perception went from 7% to only 2%.

1.5 Measurement of the perception of the training process based on remote face-to-face classes supported with ICT tools.

This was done to know the evaluation of the graduates of the cohorts that developed part or all of the curricular plan of the program analyzed through synchronous classes with remote attendance supported by ICT tools. Regarding the work done by the program to facilitate and guarantee the teaching-learning processes during the pandemic, it can be seen in Figure 2 that for the cohort with all its academic curriculum developed remotely, the valuation is 100% between high grade and fully; for the case of the cohorts that developed part of their academic plan with formal face-to-face classes this valuation decreases to the range between 86% to 91%, which indicates the relevance given by the students to the formal face-to-face interaction.

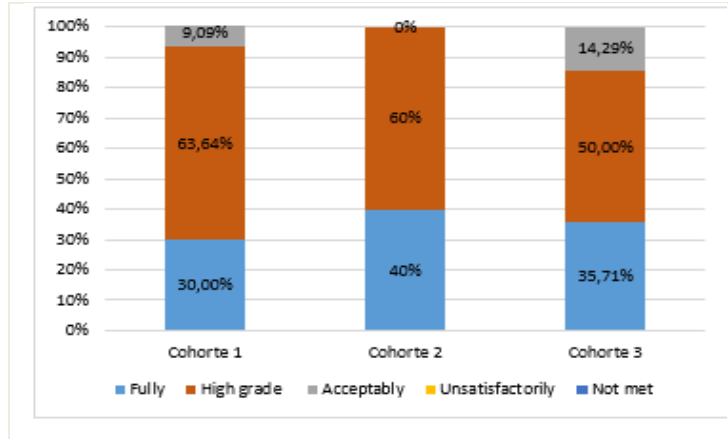


Figure 2. Perception of the strategies implemented by the program to facilitate the learning process through remote face-to-face classes.

Figure 3 shows the perception related to the fulfillment of the training profile defined by the program, indicating that for the students of cohort 2, developed with all their classes in remote attendance, it is considered that their training process allowed them to assimilate the competencies of the graduate profile with a valuation of 80% between fully and high degree. In the case of Cohort 3, with classes in hybrid modality, the evaluation rises to 100% of appropriation between full and high degree.

Cohort 1, with one semester of class before the pandemic and one semester in remote class at the beginning of the pandemic, has a rating of 80% between full and high degree, in the appropriation of its graduation profile. Cohorts 1 and 2, with equal perceptions, differ in that cohort 2 values 50% for fully and cohort 1 only 10%, which indicates the impact that moving from the formal classroom to the remote classroom generated for this cohort.

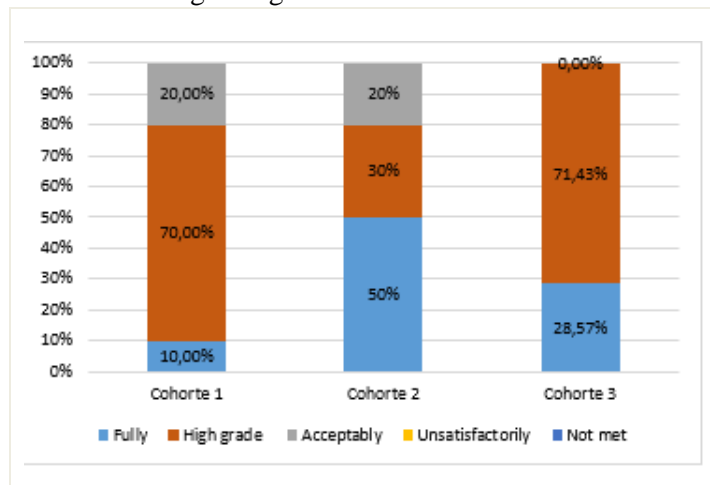


Figure 3. Perception regarding the development of the competencies of the graduate profile defined by the program.

In accordance with the comparison made for Cohort 1 and 3 in Figure 3, the results shown in Figure 4, for the perception of the development of the teaching-learning process in a semester with

formal face-to-face classes and another with remote face-to-face classes, indicate that Cohort 3 gives a higher valuation, 100% between fully and high grade, to Cohort 1 which values it with only

50%, indicates that Cohort 3 gives a higher rating, 100% between full and high, than Cohort 1, which rates it at only 50%, indicating that it was easier for a cohort admitted in advanced stages of the

pandemic to assimilate the training through remote classes than for a cohort in the initial stage of the pandemic.

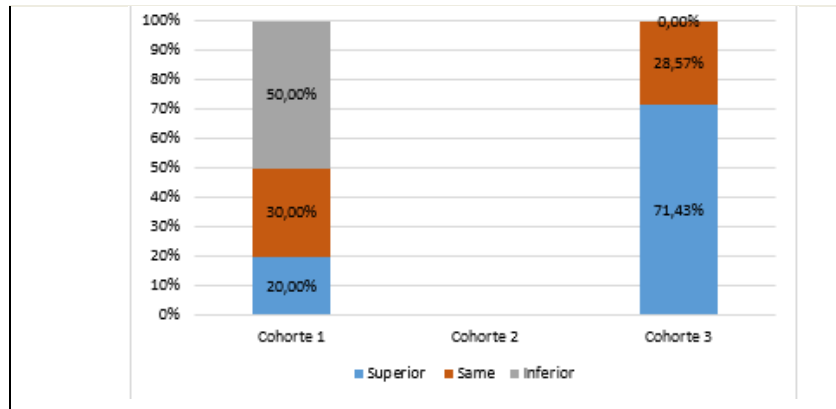


Figure 4. Assessment of the ICT-mediated synchronous classroom methodology in the teaching-learning process.

Regarding the perception of the students of the three cohorts analyzed on the advantages of the use of remote attendance supported by ICT's for the development of classes in graduate programs, each cohort has a different valuation very much in accordance with the way the classes were developed in their academic plan; Cohort 1 values

in 70% between fully and high grade, cohort 2 in 80% and cohort 3 in 93%, which indicates that the cohort in which classes were implemented in hybrid modality, consider remote presence as a good option to implement in the graduate program.

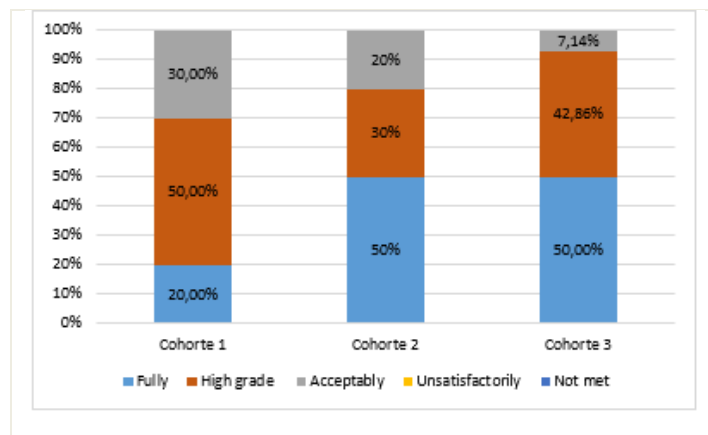


Figure 5. Assessment of the feasibility of implementing ICT-mediated synchronous classes in a graduate program.

1.6 Analysis of the implementation of remote attendance with respect to the quality conditions established in the regulations in Colombia.

Decree 1330 of 2019 and its corresponding resolution 021795 of November 19, 2020, establish the nine quality conditions and parameters for the self-evaluation of undergraduate and graduate programs. As part of the evaluation exercise of the impact that the realization of synchronous classes supported by ICT's, had on the development of the program under analysis during the pandemic period, the following was evidenced:

- The use of platforms that allow the development of video conferences such as Zoom and Meet, allow the development of synchronous classes with direct accompaniment of the teacher in these scenarios, do not modify the name of the program to the extent that the degree obtained, the level of training, the curricular contents and the profile of the graduate do not change.
- The justification of the program is not modified as the curricular content, the graduate profile, the modality offered, and the relevance of the program are maintained.
- The curricular aspects are maintained in coherence with the modality offered and the level of training. Likewise, the training components maintain the same number of academic credits, with their respective hours of academic work accompanied by the teacher and the hours of independent work. The modality allows maintaining, although with its limitations, the interaction component between teacher - student and student - student, since these digital tools continue to promote communication and direct interaction between these actors. Additionally, the evaluation mechanisms are maintained as they were implemented before the pandemic.
- In relation to the external sector, the mechanisms to link the community and the productive, social, cultural, public and private sectors are maintained.
- With respect to professors, the teaching staff of the program has not been modified; likewise,

the conditions and type of contract were maintained despite the pandemic.

- The educational facilities, as well as the physical and technological infrastructure were maintained, in the case of the physical spaces, under the restrictions and biosafety considerations for their use. In addition, the educational resources and technological infrastructure were reinforced, allowing to support the development of classes in ICT-mediated environments.

Conclusions

Undoubtedly, the global pandemic caused by Covid 19 had an impact on the entire population, affecting the different productive sectors. Activities related to education were among the most impacted, since it forced millions of students at all levels to stop receiving face-to-face classes and switch to remote classes. Many educational institutions found it more difficult to adapt to the new reality because they lacked the appropriate technological tools for remote classes. In the case of universities, which already had support platforms for face-to-face classes, it was much easier for them to adapt and continue the training process for their students. In the case of the graduate program analyzed in the research, the migration to remote classes was almost immediate, because the Universidad Francisco de Paula Santander Ocaña had implemented the Uvirtual platform for many years to support the development of face-to-face classes, in addition to having contracted the services of Google Workspace, which included the Google Meet video conferencing platform.

The use of the methodology of remote face-to-face classes through platforms that allowed the development of synchronous activities, allowed the teachers of the graduate program to continue developing the curricular plan during the pandemic period. The analysis of the perception of three cohorts developed in different stages of the years 2020 and 2021 of the pandemic, allowed to establish that in general terms the students valued in more than 80% as adequate the training process received, indicating that the competences defined by the program for the graduate profile had been acquired, among fully and to a high degree. They also valued in more than 90% the relevance of the

strategy implemented by the program, based on sensitization, socialization, training and permanent support to both teachers and students.

It was evidenced in the results of the research that the implementation of the modality of synchronous remote face-to-face classes through videoconferencing platforms, allows an adequate development of the teaching-learning process, without affecting the quality of the program and the training processes, being valued this modality as adequate in the development of graduate programs by allowing flexibility for access to postgraduate training, especially for students with restrictions for their displacement to the places where graduate programs are offered. Being the hybrid modality, with alternation of normal face-to-face classes and remote face-to-face classes, the best received by the students, as could be seen in the results shown in Figure 5 for cohort 3, with which one semester was developed 100% in remote face-to-face and the other in hybrid form.

The pandemic demonstrated the importance of graduate programs integrating virtual learning environments in the strategy for the development of the training process, facilitating access to people who, for various reasons, including geographic location, had not been able to access a graduate program. This was evidenced in the case of the program analyzed, for which the enrollment rate increased by 50% for the period between 2020 and 2021.

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