Higher education through COVID-19 lockdown: students' perceptions from a Panamanian university

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Abstract

Education was one of the sectors most affected by the COVID-19 pandemic. The presential classes with physical classroom were forced to move to online platforms, turning them into remote classes. This involved some issues as connectivity quality, learn to manage online platforms, or improvement of interpersonal communication skills in a short time. During this investigation, the authors collected and evaluated the perception of students chosen by convenience sampling from a Panamanian university. A Cross-sectional study approach helped to catch the responses in the firsts and lasts two weeks of the semester. Some areas as platforms employed, devices, and student-professor communication were examined. Results displayed that the students prefer the use of three or four online platforms in remote classes to communicate with the professor, whenever is used a number small or large to these numbers it got a rejection from students. The platforms more employed according to our responders were Institutional email, Microsoft teams, WhatsApp, and Moodle. The result also unveiled that even if most of the participants had access to a bandwidth internet, connection quality is a must. At least 32% of participants expressed have an issue with connectivity even if they used a computer or a cell phone as a device for access to classes. Throughout the diverse issues, the student satisfaction of the first semester of 2020 was good and just pointed out some recommendations as improve the teaching methodology making it more dynamic.

Keywords: coronavirus, remote classes, Panama, teacher and student communication, online platforms.

1. Introduction

1.1 COVID-19

The coronavirus disease (COVID-19) pandemic affected the lives of over 20 million people around the world. Its effect wasn't just physical, but also psychological (Piña-Ferrer, 2020). The disease originated in the Chinese province's Wuhan (Saladino et al., 2020), took the lives of many people since its discovery in September 2019. Therefore, after months of evaluation in March 2020, the World Health Organization (WHO) declared the COVID-19 as pandemic

because of its high spread rate (World Health Organization, 2020). The virus spread's contingence action of countries was to induce a massive lockdown (Dunford et al., 2020).

1.2 COVID-19 in Latin America

The virus spread rate in Latin American countries advanced rapidly. Most of the researchers show it was for some factors as economic informality, disinformation and the lack of rapid contingency actions (Benítez et al., 2020; Pablos-Méndez et al., 2020). Panama was one of the first countries in taking action to face this disease locking airports, ports and remotely inducing non-essential work and education (Televisora Nacional (TVN), 2020). In Panama, the government imposed the lockdown on the 25th of March 2020 (Deutsche Welle, 2020; Ministerio de Salud de la República de Panamá, 2020), and since this, until a few months after the 2021 year's beginning, most of the schools and universities continue remotely.

1.3 Remote Education

Remote education because of COVID-19 also called virtual education and Online Classes for some researchers (Grande-De-Prado et al., 2021; Ojeda-Beltran et al., 2020; Villa et al., 2020) was the only option to meet the social distancing and lockdown restrictions imposed by governments. Countries around the world as Namibia, Spain, Chine, Turkey, The Philippines, Peru, Chile, The United States of America, Ecuador employed remote education to keep the learning cycle working. The lector maybe feels tempted to think that in this technological era the issues related to technologies are few. But Countries, regardless of their global position, go through similar problems as connectivity, professor communication, and access to the platform. For example, an investigation made in a Guayaquil university from Ecuador shows that virtual classes' perceptions are not good because of several factors as bad connectivity, low internet signal, teaching method, and so on (Díaz Vera et al., 2020). In the Philippines, an investigation displayed connection stability as the principal factor that limits the adequate transmission of information. A student participant of the survey mention must walk between 30 minutes to one hour to get a good signal (Rotas & Cahapay, 2020). Devices as the smartphone were the principal tool for many students in Namibia, wherein a study revealed that over 50% of participants use the mobile package to access classes. In another sense, students also pointed out that remote education requires more time dedication than face-to-face classes. This time dedication wasn't guaranteed of a high performance compared with face-to-face classes, as show research developed in Spain, where most of the participants were discouraged to use the remote classes as a substitute for presential classes (Pérez López et al., 2020).

An aspect remarked by Peruvian research was the professors' lack of experience in online platforms. Over 60% of students affirm technological difficulties presented by professors during topic presentation affected them. In Colombia, the outlook was unlike previous because students at a Colombian Caribbean university catalogued as easy the use of online platforms to develop their courses. Also, they pointed out liked to consider finish their career with an online method (Ojeda-Beltran et al., 2020).

This article recollected the perceptions and levels of satisfactions of a group of Panamanian students over different areas like technology access, professor's methodology, and devices through the semester developed from March to July 2020. Since remote classes had opened a

window to improve online classes, the authors considered it timely to register the perceptions of some students, which could help to improve the academic method for the next generation.

2. Methods

2.1 Research design

This investigation has been developed under a mixed and longitudinal research design, allowing interpreting the data qualitatively and quantitatively. To carry on this, the authors elaborate a survey divided into two questionnaires. The primer questionnaire comprised 20 questions and the second of 17, with open-and-close questions (Creswell & Creswell, 2018). Questions are available at the following link: https://utpac-my.sharepoint.com/:w:/g/personal/brenda_tyril_utp_ac_pa/ERFzB5LcdJZCiyV-dudVis0BskUN3jov_I-v2G6gnsER7Q?e=mdoOoa.

The data collection time went through April-March and May-June period of 2020. Since the study aimed to catch student's perceptions of the semester, the researchers employed two questionnaires. The first one was to get previous experiences, limitations, and expectations at the beginning of the semester. At the semester's end, another list of questions was delivered to know the satisfaction with the actions and method employed by professors. Both questionnaires were written and fulfil in Spanish.

To measure the student's satisfaction level, two items were used: quality of time classes and quality of professor-student communication. The Cronbach Alpha's value was employed to check the reliability of the items.

A day before the semester's beginning, a questionnaire was sent to 169 students of Universidad Tecnológica de Panamá (Technological University of Panama). The sample composed by undergraduate and postgraduate students from Bachelor's in Industrial Engineering, Bilingual Communication, Logistic and Multimodal Transport, Software Development, Master in Logistic Systems and MSc in Mechanical Engineering was chosen by convenience; After, two weeks, the response rate was 66% for the first questionnaire. By the semester's end, another questionnaire was sent to the same students. The response rate was also 66%. These questionnaires were sent via WhatsApp. Since the mechanism employed for sending among the questionnaire's respondents, some people take part in both, also people that just take part in one of them.

2.1.1 Sampling distribution

The Sample distribution of both questionnaires is detailed in the table 1.

Table 1. Questionnaires sample distribution

Distribution	Questionnaire 1	Questionnaire 2
Gender		
Male	35.71% (40)	37.5% (42)
Female	64.29% (72)	62.5% (70)
Career		
Bachelor's in Industrial Engineering	26.79% (30)	23.21% (26)
Bachelor's in Bilingual Communication	11.61% (13)	19.64% (22)

Bachelor's in Logistics and Supply Chain Engineering	30.36% (34)	25.89% (29)
Bachelor's in Software Development	21.43% (24)	24.11% (27)
Master in Logistic Systems	3.57% (4)	-
MSc in Mechanical Engineering	6.25% (7)	7.14% (8)

Source: Own elaboration.

2.2 Data Analysis and Collection

Data collection was through Microsoft Forms and results were translated to Microsoft Excel and filtered. The exclusion criteria during the filter were duplicates, responses after two weeks released each questionnaire, and people who weren't a student. The data analysis was completed using Microsoft Excel, InfoStat (version 2017.1.2, available online: https://www.infostat.com.ar/), and SPSS 28.00 (trial version, available in: https://www.ibm.com/analytics/spss-statistics-software).

3. Results and Discussion

3.1 Questionnaire 1

The answers to this questionnaire allow knowing the conditions on which students start the semester, their expectations, previous experience, and communication with their professors.

3.1.1 Expectations

- *"Tengo altas expectativas, me parece una buena idea y una manera nueva de manejarse"* [I have high expectations; I think it's a good idea and a new way to drive it].

- *"Que el aprendizaje sea lo más cercano a una clase presencial, clases en directo, que se dé la oportunidad de aplicar herramientas de tecnología y adquirir habilidades en el manejo de softwares"* [That learning is the closest to a face-to-face class, live classes, that the opportunity be given to apply technology tools and acquire skills in the management of software].

- *"Siento que será para mi más difícil entender las clases y que lamentablemente nos atrasaremos en algunas materias"* [I feel that it will be more difficult for me to understand the classes and that unfortunately we will fall behind in some subjects].

- *"Espero que la situación no sea un inconveniente muy grande, que aunque la dinámica del curso cambien, el objetivo se cumpla"* [I hope that the situation is not a very big inconvenience, that although the dynamics of the course change, the objective is fulfilled].

- *"La verdad mis expectativas no son muy altas y mi mayor temor es no aprender lo suficiente. Siento que depende mucho de la materia en cuestión y en qué tan práctica o teórica es la misma. La única ventaja que tenemos es que no necesitamos salir de la casa y relativamente tenemos más tiempo para aplicarlo a los estudios. Espero llevarme buenas experiencias al finalizar el semestre y que todo vuelva pronto a la normalidad"* [The truth is that my expectations are not very high, and my greatest fear is not learning enough. I feel that it depends a lot on the subject in question and how practical or theoretical it is. The only advantage we have is that we do not need to leave the house and we relatively have more time to apply it to studies. I hope that I will have good experiences at the end of the semester and that everything will return to normal soon].

- *"Desarrollar nuevas habilidades"* [Develop new skills].

Students' expectations are good. It revealed a good attitude to start the semester, leaving aside the COVID-19 environment situation as isolation and personal or family health issues.

3.1.2 Previous experience

Most of the responders answer negatively to the question: ¿Do you have previous experience in online classes? Just 13.39% had taken part in virtual classes previously. Four of the students pointed out a semi-presential method using platforms like Moodle, Zoom, and Google Classroom.

3.1.3 Connectivity and Communication

It's known that a pillar to take part and advantage of the virtual classes is the connectivity and the communication with the professor (Hussain Al-Qahtani, 2019). The former is understood as the internet connection that is present in students' homes. (Kaisara & Bwalya, 2020) Supports this idea; Most of their study participants didn't have access to a stable connection, and they reflected it on their academy development; also (Avello, 2020) make eco of the students thought about connectivity, one of them should walk at least one hour and a half to get a good signal and send its homework. With this investigation, at least 86% (97) have a stable connection through Bandwidth Internet. The result also reported 14 people which have difficulty accessing the internet or just have mobile data.

Another point to highlight is the communication with the professor. Most of the 60% of responders admitted had communicated with their professor at least one time before class started. This communication predominantly goes first through the institutional email and then through WhatsApp. But in some cases (n=25) it just stays informal communication through email. The former cases presented the following thematic: platforms to use during the semester, a brief presentation, and the method they are going to use. If just used the institutional email, conversations focus on course introduction and work method. This shows up that even when a scenario's change takes place (classroom to computer) the professor keeps the same primary pattern as in face-to-face classes, where the professor used to use the two first classes to share the method and made a course introduction.

Table 2. General distribution of professor- students' communication.

Description	n	%
Methodology	28	35.90%
Platform	19	24.36%
Introduction	14	17.95%
Methodology and platform	11	14.10%
Enrollment	3	3.85%
To check schedule	1	1.28%
Homework	1	1.28%
To check schedule and information access	1	1.28%
Total of student whose receive professor communication before semester start's	78	100%

Source: Own elaboration.

3.2 Questionnaire 2

Answers from the second questionnaire permit to know the platforms more used in the semester, how the students rate the communication with the professor, the devices more used, and their final perception. To analyse the relationship between variables, a contingency table was employed and the measurement of a question with Likert scale reliability was made with Alpha Cronbach test value.

3.2.1   Connectivity, devices, and platforms

The access to a stable connection is maintained through the end of the semester. At least 106 people, representing 95% of the total, said had access to bandwidth internet. This percentage is higher than the previous got (questionnaire 1), showing that through the semester more students from the 169 questionnaire addressees got access to bandwidth internet. 5% of the respondents showed access to the classes through a mobile internet plan. Independently if this is prepaid or postpaid. Unfortunately, the access is not all, the quality of this bandwidth is also important. A 32.14% of the participants declared to have a connectivity issue. That could be attributed to a poor signal or an overload web product of multiple connections at the same time.

When the device used was evaluated, it is found that even if they have a bandwidth internet the 7.14% of participants got connected to classes using a mobile phone.

Microsoft Teams was the most frequently used platform, followed by Moodle (Figure 1). People that use Microsoft Teams as a video conferencing tool also used Moodle to supplement their content. Although the University gained access to this platform several years ago, it was not used as a primary resource to supplement face-to-face classes, as Moodle was. So, in the same sense at the beginning, the platform was used for videoconference and Moodle to share content. Even if Microsoft Teams can develop both functions.
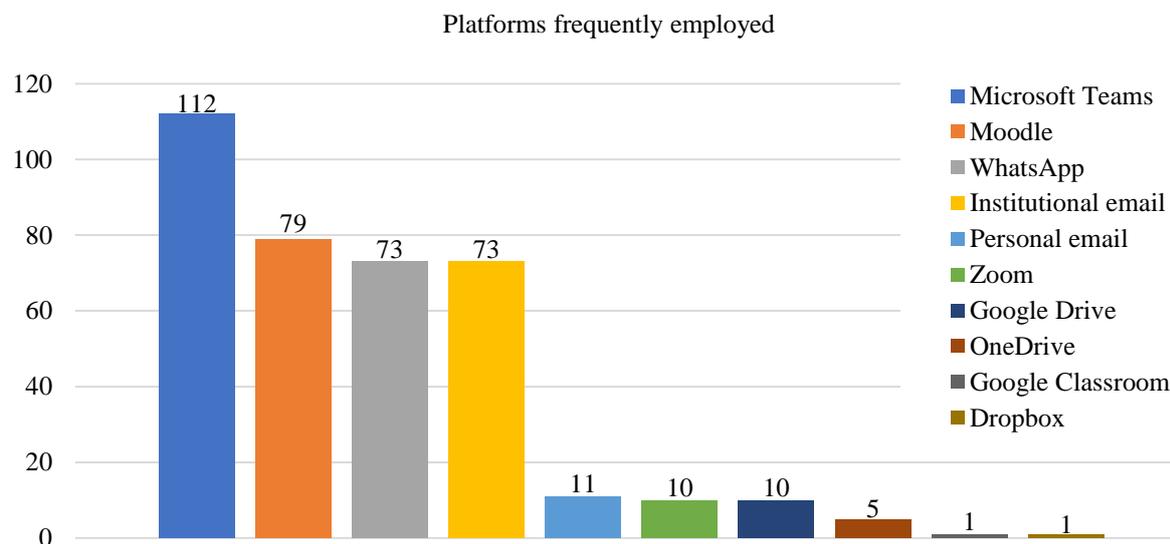

Figure 1. Platforms frequently employed per students and professors.

3.3 Professor method and communication: Inferences and level of satisfaction

Almost 100% (99.11 percent) of participants pointed out synchronous classes as the base methodology of the semester.

The level of satisfaction was measured using two Likert scale questions. To get the reliability of the questions to result in 0.711, that's means selected items were adequate to measure the students' satisfaction (Creswell & Creswell, 2018, p. 215) even if the item quantity is small.

Table 3 contains the Mean answers of each item with their Standard Deviation. Since the range was 1 to 5 (bad-poor-regular-good-excellent, respectively) the Mean result could be qualified as almost good.

Table 3. Reliability of Likert questions.

Questions (1-5 Likert Scale)	Mean	Standard Deviation	Alpha Cronbach's value
¿How was your experience in the time employed during classes?	3.8	0.789	0.711
¿How was your experience in student-professor communication?	3.9	0.815	

Source: Own elaboration.

Throughout the semester, the number of platforms that the professor used to communicate was evaluated through professor-student communication. As seen in Table 4, the students considered the use of three or four platforms to improve professor-student communication. Opposite happen when just one or two was used. The rating made by the student also got low when five or six platforms are used. Both extremes cause dissatisfaction for students. The contingency coefficient sustains the previous inference showing a relationship between both variables.

In the results presented in Table 4, most of the participants that rated with good (value of 4) the professor-students communication also point out with "good" the class experience, in the same way, who's who evaluated with "regular" in one also rated with regular in the other. As is detailed in Table 4. The contingency coefficient (C=0.67) results in a high value, demonstrating the dependency among variables. Also, the p-value (<0.05) supports this dependency.

Table 4. Influence of platform number over professor-student communication and Professor-student communication over class experience

| | Professor-students communication evaluation | | | | | | | |
	1	2	3	4	5	Total	C	p-value
Platform's number								
1	0%	1%	3%	4%	2%	9%		
2	0%	0%	5%	8%	4%	17%		
3	0%	0%	4%	13%	6%	23%	0.31	0.93
4	1%	2%	9%	15%	5%	32%		
5	0%	0%	3%	8%	2%	13%		
6	0%	1%	1%	3%	2%	6%		

Source: Own elaboration.

Class's experience evaluation								
1	0%	0%	1%	0%	0%	1%		
2	0%	3%	2%	0%	0%	4%		
3	0%	0%	13%	7%	1%	21%	0.67	<0.0001
4	1%	1%	8%	36%	11%	56%		
5	0%	0%	1%	7%	9%	17%		

3.4 Students' perceptions at the end of the semester.

At the end of the questionnaire, the students expressed themself about semester perceptions and give recommendations.
These are some responses:

- *"Los profesores deberían hacer presentaciones de power point más interesantes visualmente para llamar la atención del estudiante"* [Teachers should make more visually interesting power point presentations to get the student's attention].

- *"Al colocar asignaciones con tiempo limitado en clase tomar en cuenta dificultades con el uso de la plataforma y en los equipos de los estudiantes"* [When placing assignments with limited time in class, take into account difficulties with the use of the platform and with student computers].

- *"Dosificar el contenido por tema y mejorar el tiempo (optimización) de la sesión con temas interesantes para el estudiante"* [Dose the content by topic and improve the time (optimization) of the session with interesting topics for the student].

- *"No abrumar a los estudiantes con tanta tarea, y ser más prácticos"* [Do not to overwhelm students with so much homework, and be more practical].

- *"Por parte de los profesores, la comunicación ha sido buena y han cumplido con su labor sin embargo siento que en materias teoricas pudiesen ser clases grabadas y presentar examenes o llamadas ocasionales. Tal vez una mejora en el horario ya que estar en un salon de clase dando todas las horas es totalmente diferente a estar frente un computador o celular, la vista duele, crea migrañas entre otras cosas que puede sentir no solo estudiante sino tambien un profesor. La única recomendación que puedo dar es que capaciten a los profesores que no se sienten familiarizado con la plataforma Teams"* [On the part of the teachers, the communication has been good and they have fulfilled their work, however, I feel that in theoretical subjects they could be recorded classes and present exams or occasional calls. Perhaps an improvement in the schedule since being in a classroom giving all the hours is different from being in front of a computer or cell phone, the sight hurts, it creates migraines among other things that not only a student but also a teacher can feel. The only recommendation I can give is that they train teachers who are not familiar with the Teams platform].

- *"Seria bueno que todos los profesores usaran la misma plataforma para trabajar mejor"* [It would be good if all teachers used the same platform to work better].

The last question of the questionnaire was oriented to evaluate if the semester accomplishes their expectations, where the average score was 3.80 (almost good). The central point to improve is the professor's methodology, which have an impact at the beginning, during, and by the end of the semester.

4. Conclusion

The student's perception in the first remote semester because of COVID-19 pandemic shows several aspects that must be improved as the quantity of the assignments. A bulk of homework doesn't result useful because as showed in the previous section the students tend to feel overwhelmed. During a period of adaptation, how was the first semester of 2020 this rating shows that the professor methodology impact in a high sense the perceptions of students about remote classes. The remote classes through the eyes of the students' participants were almost good, regardless they used a smartphone or a computer as the primary device.

Students showed a preference for use three or four platforms to communicate with their professor. These platforms include Microsoft Teams, Moodle, WhatsApp, and Institutional email. The most used was Microsoft Teams who can do all the functions of the other three platforms. But even with that, professors and students use another alternative. It could be because of the expertise using this platform since the platform used as a complement of face-to-face classes was Moodle, so is likely that if the survey is repeated in 2021 the number of platforms got reduce to one or two.

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