Article **Journal of Contemporary Sociology**
June 2023, Vol.10 No.28 26-35

Impact of the COVID-19 contingency on the food process engineering career at UTSOE

Impacto de la Contingencia de COVID-19 en la carrera de ingeniería en procesos alimentarios en UTSOE

MORALES-FÉLIX, Verónica de Jesús†* & ROMERO-BALTAZAR, Diana Laura

Universidad Tecnológica del Suroeste de Guanajuato, México.

ID 1st Author: *Verónica de Jesús, Morales-Félix* / **ORC ID:** 0000-0001-9167-3160, **CVU CONACYT ID:** 167136

ID 1st Co-author: *Diana Laura, Romero-Baltazar*

DOI: 10.35429/JOCS.2023.28.10.26.35 Received January 30, 2023; Accepted June 30, 2023

Abstract

The present research was conducted at the Southwest Technological University of Guanajuato (UTSOE), a public university with in-person classes. It focused on the impact of distance education resulting from the COVID-19 contingency, during which face to face classes were suspended at all levels. Surveys were administered to eighth and eleventh- semester groups during the corresponding period of January - April 2021, from the food processing engineering program. The research investigated the effectiveness and efficiency of the adopted Virtual Teaching-Learning Environments. The data collected were coded and analyzed using Excel 2016 and IBM SPSS Statistics V21, through descriptive analysis. The study revealed that students' motivation has significantly decreased since the beginning of the pandemic, with a majority experiencing at least one disorder, and 48.6% being at risk of dropping out. Therefore, it is concluded that, despite the university's appropriate measures to handle the new modality, students have been significantly affected, especially in psychological and emotional aspects.

Distance learning, Impact, Desertion

Resumen

La presente investigación se desarrolló en la Universidad Tecnológica del Suroeste de Guanajuato (UTSOE), universidad pública de corte presencial, acerca del impacto que tuvo la educación a distancia a distancia derivada por la contingencia de COVID-19, en la cual se suspenden las clases presenciales en todos los niveles. Mediante encuestas que se aplicaron a los grupos de octavo y onceavo cuatrimestre del período correspondiente enero – abril 2021, de la carrera de ingeniería en procesos alimentarios; en donde investigó la eficacia y la eficiencia los Entornos Virtuales de Enseñanza Aprendizaje (EVEA) adoptados. Los resultados se codificaron y analizaron en los programas de Excel 2016 e IBM SPSS Statistics V21, mediante un análisis descriptivo. Derivado del estudio se sabe que la motivación de los alumnos ha disminuido considerablemente desde el inicio de pandemia, la mayoría ha presentado al menos un trastorno y el 48.6% se ha encontrado en riesgo de deserción. Por lo que se concluye que, a pesar de que la universidad tomó las medidas adecuadas para el manejo de la nueva modalidad, los estudiantes se han visto afectados en gran medida, principalmente en los ámbitos psicológico y emocional.

Educación a distancia, Impacto, Deserción

Citation: MORALES-FÉLIX, Verónica de Jesús & ROMERO-BALTAZAR, Diana Laura Impact of the COVID-19 contingency on the food process engineering career at UTSOE. Journal of Contemporary Sociology. 2023. 10-28:26-35.

* Correspondence from the Author (E-mail: vmoralesf@utsoe.edu.mx)
† Researcher contributing as first author.

Introduction

The COVID-19 pandemic is having profound impacts on education, yet even before it, the world was facing a learning crisis. Most countries were a long way from achieving the Sustainable Development Goal, which commits the world to ensuring inclusive, equitable and quality education and promoting lifelong learning opportunities for all by 2030, but so far according to Rogers (2020), even universal quality schooling at primary level -not to mention secondary, tertiary or lifelong learning - has proven to be unattainable in many countries.

The online education modality had its advantages for university students, as practical subjects became theoretical, and the inclusion of information and communication technologies as their new means of learning greatly promoted autonomy when continuing their studies during the contingency.

However, in general it does not seem that the change of modality has been received very positively at UTSOE, part of the disaffection comes from the fact that the content offered was never designed in the framework of a distance higher education course, Román (2020) mentions that it tries to palliate the absence of face-to-face classes with virtual classes without further prior preparation.

Based on the above, the importance of the present research focuses on determining the impact generated by the implementation of COMUT, an educational platform based on Moodle, Microsoft Teams, and other environments that will be shown in the work, on the students of the educational program of engineering in Food Processes of the Technological University of Southwest Guanajuato (UTSOE), through descriptive surveys that allow rescuing significant data on the experiences of students with respect to the modalities adopted for the continuity of their education.

Development of the research

Methodology

Based on the bibliographic consultation, a pilot form was developed and applied to two students in the eleventh quarter of the Food Process Engineering course, in order to determine in time the possible sources of error, and thus make the necessary modifications. Once the pilot form was corrected, a final survey format was established with which the different situations through which the groups of this career have gone through since the beginning of the pandemic to date, covering the issue of the continuity of their higher education through online classes.

The form was divided into two parts, the first part (section A) consists of 17 questions (most of them of the Likert scaling type) and focuses on the conformity and non-conformity of the students to the measures taken by the university during the COVID - 19 contingency and their experiences with their education in this new modality and with the virtual teaching and learning environments proposed; the second part (section B) consists of 13 closed questions and focuses on the student's environment. It is worth mentioning that the questionnaire is composed only of closed-ended questions and statements (Likert scale) and includes dichotomous questions (yes/no questions), multiple choice with single answer, and multiple choice with multiple answer. The survey format can be found in the appendix. 1.

Sampling

Since the project focuses only on the groups of the food process engineering career, the type of sampling used is a non-probabilistic convenience sampling, so the survey was applied to the eighth and eleventh semester groups, with a total of 35 responses.

Method of collection

The questionnaire was applied through the Google Forms platform and the link was distributed through the Facebook and WhatsApp social networks specifically to the students in question.

ISSN 2410-3985

Analysis of the results

The results obtained in the applied surveys were coded and analyzed with Excel 2016 and SPSS Statistics V21 programs; thus, a descriptive analysis was used for the treatment of the results, in order to show the information with graphic and visual means according to what was obtained in the surveys.

Results

The results obtained from the information gathered from the surveys applied to the students are presented below. As previously mentioned, a descriptive analysis is presented with the help of Excel 2016 and IBM SPSS Statistics V21 programs. In relation to the above, the questions were categorized to guide the data collection.

Thus, it is important to take into account that 42.9% of the respondents are students in the eighth quarter, said percentage is equivalent to a total of 15 students; and the other 57.1% corresponds to students in the eleventh quarter, that is, 20 students (Table 1).

Grade	Frequency	Percentage
Eighth	15	42.9
Eleventh	20	57.1
Total	35	100

Table 1 Grade level of the respondents

Initial data analysis

The questions were classified according to the information they showed and were grouped into the same category to facilitate their analysis. This categorization is shown in Table 2, which shows the questions (items) that make up each category in each section of the questionnaire.

Category	Section A items	Items from section B
Management of the new modality, effectiveness and efficiency of the EVEAs implemented.implementados.	8, 10,11, 12, 13, 14, 15, 16, 17	1, 2, 3, 4, 5, 6, 7, 10.
Attention provided by the university throughout the contingency.	3, 4, 5, 6.	-
Impact on communication between classmates and professors.	7, 9.	-
Emotional impact of the contingency on students.	1, 2.	11, 12, 13.
Economic impact.	-	6, 7, 8, 9.

Table 2 Categorization of questions according to the information they provide

Thus, it is shown that the research is mainly aimed at evidencing the students' opinion on the university's handling of the new modality and, based on this, to speculate on the impact of the COVID contingency. 19.

On the other hand, Table 3 shows the classification of the questions according to their type, in order to facilitate their understanding when coding and analyzing them.

Type of question	Section A items	Items from section B
Likert scaling Likert	1 -11, 16	-
Dichotomous.	12.	1, 4, 5, 8, 9, 10, 13.
Multiple choice, single response.	14, 15, 17	2, 6, 7, 12.
Multiple choice, multiple response.	13	3, 11.

Table 3 Classification of the questions according to their type

Management of the new modality

As already mentioned, the most outstanding aspect of the research refers to the handling of the new modality to which students and teachers had to adapt. The results obtained in this category are shown below, according to the information from the corresponding questions.

ISSN 2410-3985

In the first instance, students are asked their opinion about whether the university acted in the most appropriate way for the continuity of classes in the first four-month period covered by the pandemic (January - April 2020), to which 45.7% agree and 20% strongly agree. Therefore, it is interpreted that the university had a good management regarding the different modalities taken by the contingency measures.

To complement the above, information is obtained about the student's opinion on the training that the professors received from the university to keep them updated and thus, to have a better management of the different platforms used. The results of this question are shown in Figure 1, in which the graph shows that 57.14% of respondents agree with the above statement, and in contrast to this, 11.4% disagree and 2.85% strongly disagree. This could mean that at least more than half of the students are satisfied with the training received by their professors, and that they consider them efficient for the continuity of their studies.

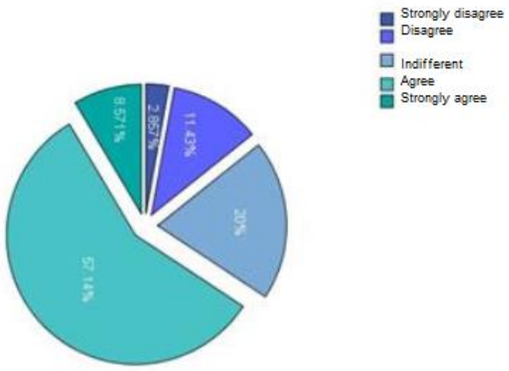

Figure 1 Graph of the students' perception of the teachers' management of the different teaching and learning environments.

On the other hand, question 10 of section A, through the same scale (Likert), evaluates the knowledge that students had regarding the existence of the platforms with which they worked throughout the contingency. Figure 2 shows the results obtained in this item and it can be seen that 34.29% of the students disagree with the statement presented, and 2.85% strongly disagree; however, although the percentage of students who claim not to have prior knowledge about the existence of such platforms is high, 42.86% claim to agree with the item.

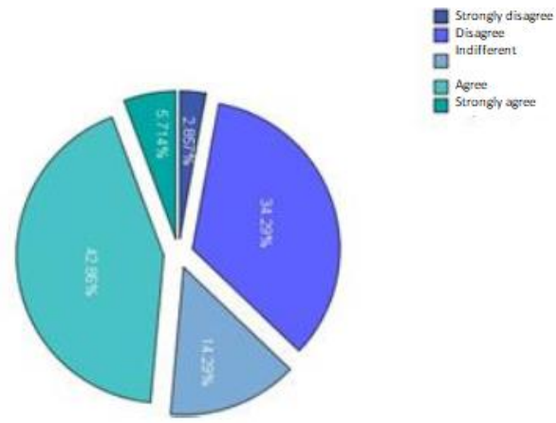

Figure 2 Graph of results obtained in question 10 of section A
Source: Own elaboration

In relation to this, we inquire about the previous knowledge in the handling of the platforms by the student (Figure 3), where it is shown that 37.14% of the students disagree with it and in turn, 11. 43% strongly disagree, which can be interpreted as meaning that at least a frequency of 17 students (13 who chose "Disagree" and 4 who used the "Strongly disagree" option) did not have the necessary experience for the adequate handling of the platforms used, in contrast with 8 students who claim to have previous knowledge for the use of them.

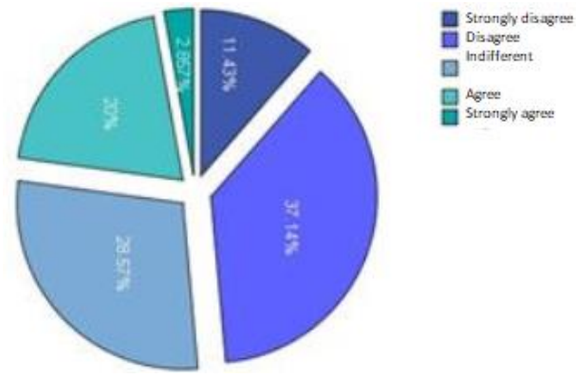

Figure 3 Graph of results obtained in question 11 of section A. 11 of section A

According to the above, it is important to highlight that 71.4% of the respondents claim not to have received a course or orientation to learn how to use the new platforms presented and that it is likely that 28.6% of those who claim to have taken a course or orientation, have taken it on their own. Based on the negative responses, it can be deduced that the university did not offer courses, orientations or training for students.

ISSN 2410-3985

Thus, it is necessary to show evidence about the platforms used from the beginning of the contingency to date, so question 13 asks students what means have been used for the continuity of their online education and the results of this are shown in Figure 4.

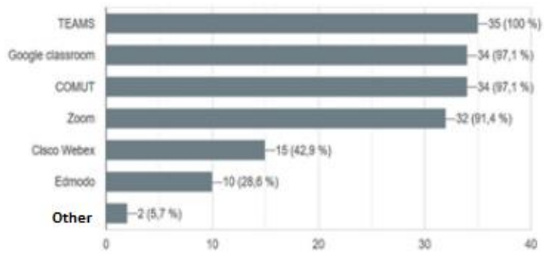

Figure 4 Graph of results obtained in question 13 of section A
Source: Own elaboration

The graph in Figure 4 shows that the most used platforms were Microsoft TEAMS, followed by Google Classroom and COMUT (the university's exclusive platform based on Moodle) and finally Zoom, and that the least used platforms were Cisco Webex, Edmodo and other platforms. In addition, it is known that there are platforms that do not meet the necessary requirements to carry out the continuity of online classes. Therefore, questions 14 and 15 of section A focus on obtaining the student's opinion about which platform they consider is the best and which does not meet their needs as a student, respectively; having as a result that 45.7% consider that Microsoft TEAMS has been, so far, the best platform (Figure 5); while 42.9% consider that Cisco Webex is the platform that least meets the student's needs (Figure 6), it is worth noting that for question 14, Cisco Webex was not selected as the best platform by any student.

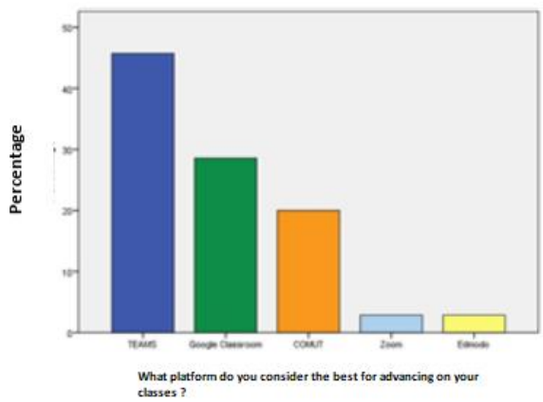

Figure 5 Platform selection

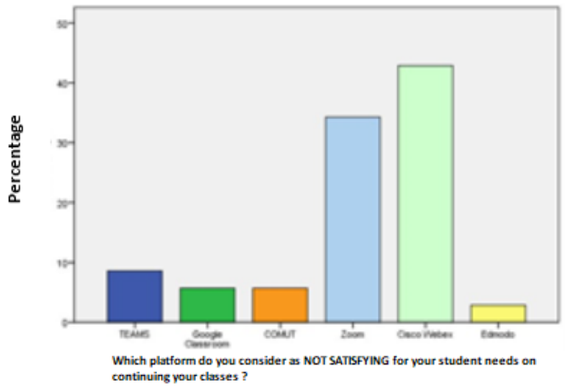

Figure 6 Graph of the platform that students consider does not meet their needs

Regarding the above, the university platform (named COMUT, based on Moodle), had a result of 20% with respect to being the best for the continuity of classes, and based on this, COMUT was rated according to their opinion on the functionality for the development in their sessions and activities, so that, with an average of 3.77 on a rating scale with a minimum of 1 and a maximum of 5, the platform can be considered as "acceptable"; thus, Figure 7 shows the percentages obtained in this question, showing that COMUT is considered as "Very good" by the students of the food process engineering course. Likewise, it is noteworthy that no student considers it as "Bad", so it is considered a good option (or alternative) to use.

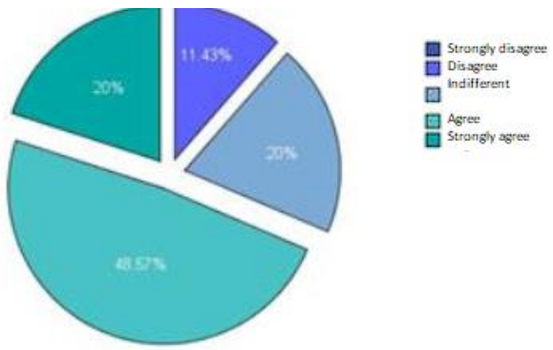

Figure 7 Evaluation of the COMUT platform

Another important aspect to evaluate in this category is the student's preference for the type of classes that have been handled throughout the contingency, with the result that 71.4% of the students prefer synchronous classes, 25.7% prefer asynchronous classes and the other 2.8% are satisfied with only the delivery of activities (Figure 8).

By way of interpretation, it can be mentioned that, so far, synchronous classes have been the most effective method to continue with their classes.

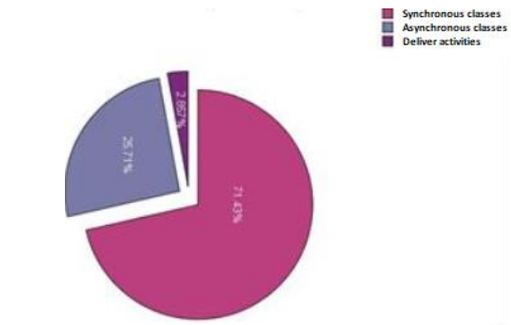

Figure 8 Modality preference

As already mentioned, synchronous classes allow students to interact with their professors and classmates in real time, which is a great advantage when resolving doubts about a subject. However, for some students it is a problem when taking the sessions in this modality.

Figure 9 shows that 68.8% of the students surveyed do not have a specific space at home to take their classes, which implies the possible existence of distraction factors that may alter the students' learning.

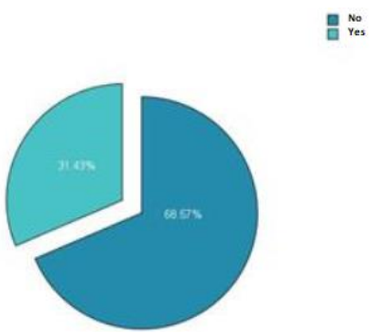

Figure 9 Graph of results regarding the specific place to take their classes

Consequently, information is obtained on the computer equipment that students have, this being one of the most important aspects of the research, since ECLAC assures in its report on COVID- 19 that, as of 2018, only 57% of Mexican students over the age of 15 had access to a computer (ECLAC-UNESCO, 2020). Question 3 of section B reveals which technological equipment the students of the food process engineering career have to attend their classes in the online modality. The results are presented in Figure 10.

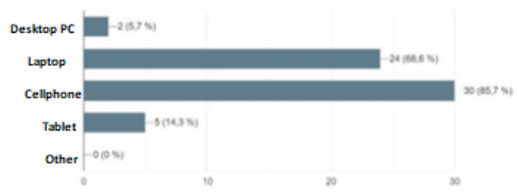

Figure 10 Graph of the computer equipment available to students

In the previous figure, it can be observed that only 68.6% of the students have a laptop, and only 5.7% have a desktop computer. In comparison with the data mentioned by UNESCO, the percentage varies by 11.6%, although it should be noted that the research only shows data from students in the food process engineering program at UTSOE.

However, it is important to highlight this percentage, since there are still students without access to a computer, which can result in difficulty when carrying out work and activities, since, although 85.7% have a cell phone, there are activities that can only be carried out using a computer.

Annexes

Annex 1. Survey form format

Good morning.

We are working on an investigation regarding the impact of the contingency derived by COVID-19 in the food process engineering career.

Please read the instructions carefully, as there are questions in which you can only answer one option and others are multiple choice. There are no right or wrong answers.

Thank you very much for your cooperation!

INSTRUCTIONS

Regarding the measures taken by the COVID-19 contingency in your higher education, answer according to your situation and your consideration the following questions.
QUESTIONS. Section A.

ISSN 2410-3985

1. During the contingency and with respect to the continuity of my higher education I have felt much more motivated than when I was attending on-site classes.

- Strongly Agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

2. During the contingency and with respect to continuing my higher education I have felt less motivated than when I was attending face-to-face classes.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

3. The measures taken by the university were the most appropriate to continue classes in the quarterly period January - April 2020.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

4. Attention by the school department, has remained unchanged.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

5. The attention provided by the university in general has remained unchanged.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

6. How do you evaluate the attention given by the university throughout the the university throughout the contingency?

- Excellent
- Very good.
- Good.
- Fair.
- Poor.

7. Throughout the contingency, communication and interaction with my professors has remained the same as during face-to-face classes.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

8. I consider that the university efficiently trains professors to keep them updated and to be able to better manage the different platforms that we use.

- Very much in agreement.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

9. Throughout the contingency, communication and interaction with my classmates has remained the same as during face-to-face classes.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

10. I was familiar with most of the platforms used by the university for lecture delivery.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

ISSN 2410-3985

11. I had previous experience with the various platforms that were used (used) in my online education.

- Strongly agree.
- Agree.
- Neither agree nor disagree.
- Disagree.
- Strongly disagree.

12. Did you receive any course/orientation to improve your skills in the use of the different platforms?

- I received a course/orientation.
- I did not receive any course/guidance.

13. Which platforms have you used to continue with the online classes? Select all the options you require.

- TEAMS
- Google classroom
- COMUT
- Zoom
- Cisco Webex
- Edmodo

14. Which platform do you consider has been the best to continue with your classes?

- TEAMS
- Google classroom
- COMUT
- Zoom
- Cisco Webex
- Edmodo

15. Which platform do you consider that DOES NOT MEET your needs as a student for the continuation of your classes?

- TEAMS
- Google classroom
- COMUT
- Zoom
- Cisco Webex
- Edmodo

16. Do you prefer:

- Synchronous classes (virtual face-to-face: classes via pre-scheduled videoconferences).
- Asynchronous classes (distance virtual: explanatory videos, written indications, COMUT deliveries).
- Delivery of activities (without previous explanations, information through pdf, deliveries by e-mail).

Section B. Student Environment

1. In your home, do you have a specific space to take your classes?

- YES.
- NO.

2. How many people in your household take online classes, including you? online, including yourself?

- 1
- 2
- 3
- 4
- 5 or more.

3. Which of the following equipment do you rely on to receive your classes? Select the necessary options:

- Desktop computer.
- Laptop.
- Cell phone.
- Tablet.
- Other.

4. Prior to the pandemic, did you have fixed internet access at home? at home?

- YES
- NO.

5. Currently, do you have fixed internet access in your home? home?

- YES.
- NO.

6. Did you contract fixed internet service because of the pandemic?

- Yes, I did.
- I am going to contract it.
- I do not plan to contract it.

ISSN 2410-3985

7. Currently, how do you access your classes/activities?

- I have wifi.
- I use mobile data.
- I go to a cyber cafe
- Other.

8. Are you currently employed?

- YES
- NO

9. During the time of contingency, have you been at risk of dropping out?

- YES
- NO

10. Do you consider that you have an environment conducive to adequately take your classes?

- YES
- NO

11. Have you presented any of the following disorders throughout the contingency? Select the necessary options:

- Stress.
- Anxiety.
- Depression.
- Insomnia.
- Concentration problems.
- Other.

12. Have you received help to get better?

- YES.
- NO
- I have not requested it.

13. Have you requested help from the psycho-pedagogical department of the UTSOE?

- YES
- NO

Conclusions

The research showed that, indeed, the digital divide is one of the main conflicts of online education, although, contrary to what was expected, the problem lies in the access to computer equipment, since most students have access to the Internet at home, likewise, it is evident that neither students nor teachers received courses or guidance regarding the management of the platforms used.

It is presented that, of the modalities implemented by the university to the student community, the students of the food process engineering career prefer synchronous classes, being the most appropriate for their training due to the interaction in real time with their professors. It is considered that both Microsoft Teams and COMUT (Moodle-based platform) were the ones that students considered most effective and efficient for this contingency period.

Likewise, it is shown that communication and interaction between teachers and students was not affected by the pandemic, contrary to communication and interaction among peers, which the respondents say has been distorted; it would be interesting to investigate whether this alteration has been positive or negative.

Whether this alteration has been positive or negative.

Another point that the research proves is the psychological and emotional impact of the pandemic on students, which shows that all students have presented at least one disorder, being stress the most common, in addition to this, specific information on the causes is required.

Finally, the following aspects are highlighted for further research:

- Factors that influence student motivation.
- Factors that favor the appearance of psychological and emotional disorders in students.
- Factors of the risk of desertion.

ISSN 2410-3985

- Factors that influence the student's decision to work and study simultaneously.

References

CEPAL-UNESCO. (2020). La educación en tiempos de la pandemia de COVID-19. La educación en tiempos de la pandemia de COVID-19 (cepal.org)

Rogers, H. (2020). COVID-19: Impacto en la educación y respuestas de política pública. GRUPO BANCO MUNDIAL.

Román, M. (2020). La educación superior en tiempos de pandemia: una visión desde dentro del proceso formativo. Revista Latinoamericana de Estudios Educativos, 13-40. https://www.redalyc.org/journal/270/27063237017/27063237017.pdf.

ISSN 2410-3985