

Adaptation of Higher Education to the attacks of the pandemic

Adaptación de la Educación Superior ante los ataques de la pandemia

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Abstract

The objective of this study is to understand the impact of the Covid-19 pandemic on the mental health of students and teachers, as well as the challenges that have arisen over the years in rural and urban population. The situation was different in both cases. We know that in urban areas the proximity to technology is something of daily life, fast and simple, while in rural areas it is more difficult to have access to technology and media. An investigation was made consulting different sources, including INEGI data to determine an analysis of the desertion of students in the last years 2019-2020 and 2020-2021, in the same way a survey was made considering a sample of student population from the Polytechnic University of Juventino Rosas through which data was collected on their experience during the pandemic. The conclusions show an impact on the mental health of the participants. It indicates that most of them had emotional conditions, causing problems such as stress, anxiety, frustration, among other symptoms.

Pandemic, Education, Mental health

Resumen

El objetivo del presente estudio es el entendimiento del impacto que tuvo la pandemia de Covid-19 en la salud mental, de estudiantes y profesores, así como también los desafíos que se presentaron a lo largo de estos años tanto en la población rural como urbana. En las zonas rurales y urbanas se vivió diferente, sabemos que en las zonas urbanas la cercanía a la tecnología es de manera diaria, rápida y sencilla, mientras que en zonas rurales es más difícil tener acceso a la tecnología y medios de comunicación. Se realizó una investigación en diferentes fuentes incluyendo el INEGI para determinar un análisis sobre la deserción de alumnos en los últimos años 2019-2020 y 2020-2021, de igual manera se realizó un análisis cuantitativo, para esto se llevó a cabo una encuesta sobre una muestra de población estudiantil de la Universidad Politécnica de Juventino Rosas mediante la cual se recopilaban datos sobre su experiencia durante la pandemia. Las conclusiones muestran un impacto en la salud mental de los participantes e indica que la mayoría tuvo afecciones emocionales, causando problemas como estrés, angustia, frustración, entre otros síntomas.

Pandemia, Educación, Salud mental

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Introduction

In the year 2019 the World Health Organization (WHO) spoke for the first time about a new virus for the year 2020 was declared as a pandemic. Many areas were severely affected, and due to the confinement, all school activities were suspended from one day to the next without prior notice to anyone, possible strategies were planned as quickly as possible, taking all solutions off the table. Schools opted to continue and close the school cycle that year and continue virtually.

Because of this, roles began to change, not only at school, but also in our homes. Some of the parents also became teachers, supporting, above all, the children at home. In the middle of the 2021 school year, many schools opted to run pilot schemes, starting in classrooms at 70% or 80% of their capacity or some returning to 100% face-to-face teaching.

Due to the fact that teaching was in decline and there was beginning to be more student desertion (Geography, n. d.), it was decided that students would return to the classroom, preserving all the safety and hygiene measures that were taught worldwide, re-adopting the old roles, but with new habits. The current paper presents a general approach to the crisis generated by the pandemic.

It will show the challenges of what education in times of pandemic has been like, how it has impacted on teachers and students, mental health issues, and how it has impacted on both rural and urban populations.

The study was based on an analysis of different sources of information, including the National Institute of Statistics and Geography (INEGI), and will make clear how the pandemic has affected education and how it has been adapting to it.

Similarly, a qualitative approach was used in which data was collected from surveys of a selected from surveys of a certain population at the Polytechnic University of Juventino Rosas, to identify how the pandemic has affected them.

Background

In October 2020, at the Universidad Iberoamericana in Mexico City, Sylvia Schmelkes described the likely short- and long-term impact of the pandemic on higher education by analysing economic, technological and pedagogical-organisational factors, analysing the situation of higher education in Mexico and data from the Ministry of Public Education (SEP) and INEGI. As well as in September of the same year at the Autonomous University of the State of Hidalgo, he conducted a quantitative approach using a sample of 168 indigenous students in Mexico, with the aim of identifying the impact of indigenous students on their learning. On 25 October 2020, at the Autonomous University of Chiapas, Mexico, Lilia González Velázquez proposed to demonstrate the increase of academic stress associated with the pandemic and some mental health problems, through the analysis and questionnaires of perception of academic stress in students.

Similarly, on 31 May 2021 at the Universidad Anahuac Mexico (Mexico), Carlos Gabriel Colín Flores wrote an article to understand the impact of the pandemic on the mental health of students and teachers through a study of 834 participants (161 teachers and 673 students).

In October 2020 at the Instituto Tecnológico de Sonora, Samuel Alejandro Prtillo Puñuelas, Oscar Ulises Reynoso González, Lidia Isabel Castellanos Pierra conducted research on teachers in different states of the country with the aim of identifying the rural areas that have greater complexity in teaching and making a comparison between rural and urban contexts.

COVID-19 pandemic

COVID-19 was first reported in China by the Center for Disease Control and Prevention (CDC). It had a negative impact on multiple aspects of human life, physically, psychologically, economically, socially and culturally.

Our daily lives were suddenly changed, worst of all by the confinement, which caused society to feel frustrated as important aspects of their daily lives were limited.

A pandemic is the spread of an infectious disease of humans over a geographically large area, i.e. extending to many countries or attacking almost all individuals in a locality or region. The word comes from the Greek πανδημία, from παν (pan, all) and δῆμος (demos, people), an expression meaning a gathering of a whole people.

COVID-19: A highly contagious respiratory disease caused by the SARS-CoV-2 virus. This virus is transmitted from one person to another in droplets that are dispersed when the infected person coughs, sneezes or speaks.

Confinement: Confinement is the action and effect of confining. This verb refers to confining someone within boundaries or banishing them to a mandatory residence.

Roles: The role is the part or function that someone or something represents or performs, either willingly or by imposition. The word, as such, comes from the English role, which means 'role of an actor', and this in turn comes from the French rôle.

Strategies: Strategy is a procedure for decision-making and/or action in a given scenario. The aim is to achieve one or more previously defined objectives.

Families: A family is a group of people who have a degree of kinship and live together as such. The word family comes from the Latin famulus which means 'servant' or 'slave'. In fact, in ancient times the expression included the relatives and servants of the master's household.

Teaching: Example, action or event that serves as experience, teaching or warning how to act in similar cases.

Development of Sections and Paragraphs of the Article with subsequent numbering

Challenges generated by the pandemic

The pandemic not only affected the country economically, but also socially and above all the basis of any society.

The family was affected in a direct and catastrophic way, but this is not all bad, it also brought with it many advantages for the understanding between parents and children, the roles that are lived in the day to day normality were modified taking other roles within the home, in the same way it brought with it advantages of good knowledge, due to the fact that many parents do not live much with their children, this helped to increase communication and to learn from each other.

In summary, it can be said that the advantages of this family-school alliance are:

1. Increased parenting skills. By constantly interacting in the educational process, parents have a better understanding of their children's development and therefore improve family dynamics.
2. More effective teaching. By involving parents, school administrators and teachers can carry out activities that lead to better quality education, this is mentioned in the article "Out-of-school education in times of pandemic by Covid 19. Experiences of students and parents".

On the other hand, we have what are the disadvantages that occurred within the home with the arrival of the pandemic some of these are:

1. The affectation of the parent-teacher relationship, leading to a certain degree of authority to teach, but not to exceed this power so as not to lead to opposition with the pupil.
2. The adaptation of parents not only to learn ICT as quickly as possible, but also the relationship of learning with their children. Before the pandemic, only teacher and student interacted, but in the situation of confinement, parents have had to take action if they want to support the educational process of their children.
3. Emotions such as control, self-awareness and self-regulation are some of the emotions which pupils and parents, under constant stress at home due to work, school, homework, etc., have not been able to manage in the right way.

Categories in which the family had changes in several areas, which are set out in the following points:

1. Responsible for upbringing. Where parents are in charge of the care and protection of children, also promoting the necessary conditions for their children to attend school.
2. Guardians or teachers. This category refers to the continuation and reinforcement of education at home. They play the role of supervisor and facilitator to complete homework, as well as the development of projects that help to more effectively implement knowledge.
3. School support agents. In this case, we are talking about the contributions made by parents to improve the conditions of the learning process, both financially and in terms of time, as well as the contribution of ideas and materials.

In conclusion, the greatest challenges presented by the pandemic were adapting to this new school modality and to the new changes presented at home. Adaptation is something that human beings do every day of their lives, but when we suffer adaptations to such sudden situations it generates a certain type of stress, fear and sometimes denial of the new changes, bringing with it difficulties in carrying out our daily activities and relating to our families as well as to other people.

Impact on teachers and students

The impact caused by the pandemic since 2019 has not only been socio-economic, but has also left damage to mental health, which has been compromised differently in each phase of the pandemic and it is therefore important to identify how it is affected at different stages of the pandemic process (WHO, 2020).

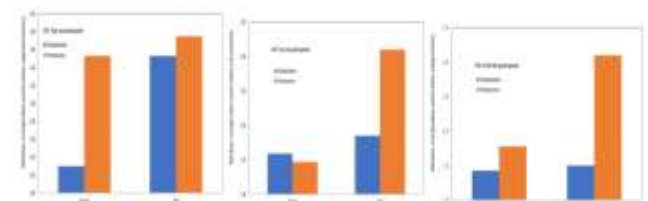
At the Ibero-American University in Mexico, ENCOVID19(2020) surveys were carried out and the results were as follows: 27% of respondents over the age of 18 reported depressive and severe anxiety symptoms. This allowed us to assume that the Covid-19 pandemic will affect the mental health of the population in Mexico in general. (Flores, 2021).

According to the article El impacto de la pandemia Covid-19 sobre profesores y estudiantes en escuelas de negocios en México (The impact of the Covid-19 pandemic on teachers and students in business schools in Mexico), a study was conducted in which the mental health of teachers and students was analysed due to the change from face-to-face classes to virtual classes. The variables and results obtained are presented in table 1, where the level of affectation is observed.

Inicio del curso (febrero 2020)							
Level of impairment	Total	%	Estudiantes	%	Profesores	%	p Value
Depression (PHQ-9)							
Normal	517	62.0	441	65.5	76	47.5	0.01<
Mild	246	29.5	190	28.2	57	35.1	
Moderate	44	5.2	28	4.1	16	10.0	
Severe	27	3.2	15	2.2	12	7.4	
Anxiety (GAD-7)							
Normal	452	54.3	376	55.8	77	47.8	0.01<
Mild	297	35.6	235	34.9	62	38.7	
Moderate	65	7.7	48	7.2	16	10.0	
Severe	20	2.4	14	2.1	6	3.5	
Insomnia (SIS)							
Normal	616	73.9	505	75.1	111	68.7	0.01<
Mild	139	16.6	104	15.4	35	21.8	
Moderate	64	7.6	51	7.6	13	7.8	
Severe	16	1.9	13	1.9	3	1.7	
Impact of the event (IES-R)							
Normal	731	87.7	589	87.5	142	88.5	0.05<
Mild	71	8.5	59	8.7	13	7.8	
Moderate	25	3.0	21	3.1	4	2.4	
Severe	7	0.8	5	0.7	2	1.3	
Burnout							
Normal	535	64.1	445	66.1	90	55.8	0.01<
Mild	194	23.2	151	22.4	43	26.8	
Moderate	87	10.4	68	10.1	19	11.6	
Severe	19	2.2	9	1.4	9	5.8	

Table 1 Level of impairment in mental health variables by type of participant at the beginning of the course (n=834) (Flores, 2021)

With these results of the level of affectation, more precise results have also been obtained, such as the variables with the highest level, which can be seen in graph 1.



Graph 1 Main variables with the highest level of affectation

The results of the study show that before the pandemic was declared, at the beginning of the academic year, in February 2020, the indicators of the variables associated with health were at normal levels, but once the pandemic was declared, these levels increased (Flores, 2021).

However, once the pandemic was declared, these levels increased (Flores, 2021). Furthermore, the article states that the group most resistant to mental health problems caused by the pandemic are students and the most affected are teachers.

Given this, the levels of cases with mental health problems are currently increasing, given that the confinement has not yet completely ended. Even today, the majority of schools in Mexico have returned to face-to-face classes, but, although they have returned, the levels of mental health problems are still present, given that there are students who have not yet become accustomed to the face-to-face modality, while for those who are still in the online modality, these problems can be presented at a higher level.

Impact on the rural and urban population

The reality of COVID in rural and urban areas was different, we know that in urban areas the proximity to technology is daily, fast and simple, many of us are used to live with such devices in our homes as televisions, telephones, computers, among others; so the adaptation to the classes and the delivery of these were simple and not so complicated.

We know that a percentage of students living in rural areas do not have access to this type of technology, so the government looked for some alternatives to provide them with a means to continue their classes. Many areas of the country presented certain problems at the time of adaptation, especially because many of the students did not have at least a mobile phone, let alone a computer, to be able to carry out their school activities.

Adaptability in urban areas was also affected by the roles they played at home, as many parents worked practically all day and having to adapt and support their children generated certain conflicts and problems at home.

Teachers were obliged to dedicate more time and effort to teach their students, some of them risked their health in order to be able to continue teaching in person and to work longer hours.

One of the most popular strategies was teaching through television, where different subjects were taught at certain times, "in this sense, efforts were directed in different directions, highlighting the inequalities and inequity of educational conditions for both teachers and students" (Portillo, Samuel, Reynoso, Oscar, & Castellanos, Lidia 2020) as mentioned in the article EL INICIO DE UN NUEVO CICLO ESCOLAR EN MÉXICO ANTE EL COVID-19. COMPARTITIVE BETWEEN RURAL AND URBAN CONTEXTS, this teaching option was not the best planned, closing activities unexpectedly and postponing the holiday period to reorganise the whole panorama for the next school cycle, thinking about all possible ways to teach all students and above all to think about all the conditions of each one of them. A big complaint in the first few months was the lack of accessibility of these means for many students to keep up with their studies.

This also affected the support from their families and the increase of problems at home, and because of this, it began to affect the school performance of each of the students, noticing that self-teaching was not the strongest, the decline of learning and the lack of interest of students to continue studying began to be noticed especially in the return to classes in person, many students have deficiencies in the different subjects to be treated within the school, leading to a much lower educational level than normal.

INEGI analysis

As a result of the pandemic since March 2020, the National Education System has faced an unprecedented challenge, implementing distance learning classes in the face of temporary school closures, impacting school cycles in recent years.

INEGI provides information of interest to various sectors of society and through the Survey for the Measurement of the Impact of COVID-19 on Education (ECOVIED-ED), the impact of the temporary cancellation of face-to-face classes in the country's educational institutions is made known.

According to the Survey for Measuring the Impact of COVID-19 on Education (ECOVID-ED), schooling in different grades has been as follows in the 2019-2020 school year, graph 2.



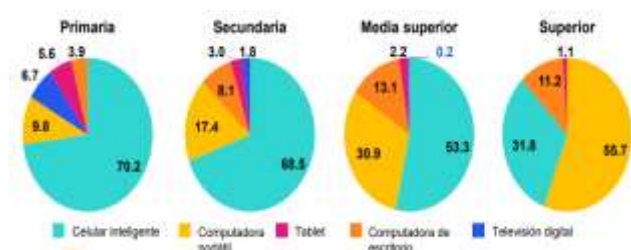
Graph 2 Percentage of schooling 2019-2020

For the following cycle 2020-2021 the percentages of students decreased mainly due to lack of resources, work, among other problems, etc., as shown in graph 3.



Graph 3 Percentage of students enrolled and not enrolled in the 2020-2021 cycle

Given this, the students who were enrolled in the different school grades used different means to do their homework and receive classes virtually, the devices they had are shown in graph 4.



Graph 4 percentage of devices in place in the 2020-2021 school year

In spite of having the appropriate devices, education brought with it advantages and disadvantages of which the population gave their opinion and which are shown in the following graph 5 (Geografía, n. d.).



Graphic 5 Advantages and disadvantages of e-learning

The pandemic has affected or benefited the population differently

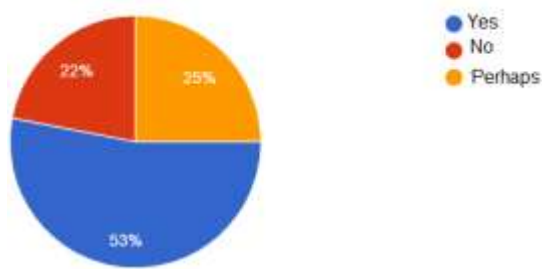
Education as such has been affected as shown in the graphs above and the question is, will this continue, will there continue to be more school dropouts, the answer is yes, school dropouts will continue not only because of the pandemic but also for different reasons as mentioned above, to which we conclude that the pandemic is not the only cause of the problems in education.

Analysis of a certain population at the Universidad Politécnica de Juventino Rosas

The quantitative analysis was carried out on a certain population of the Universidad Politécnica de Juventino Rosas, the samples collected were a total of 100 data of which are students from different careers of the university (Engineering in Networks and Telecommunications, Engineering in Plastics, Bachelor in Business Administration and Management and Engineering in Metallurgy).

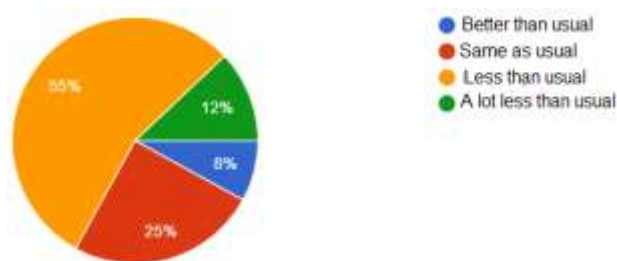
The study that was carried out was a survey of 19 questions through which we asked about how the online classes have been, how their school performance has been and how they have kept in touch among other topics.

The first most important part of our questionnaire was to find out if the academic performance of the students has decreased. 53% of the students mentioned that their performance had decreased during the confinement, which is shown in graph 6.



Graph 6 Percentage of students with poor academic performance

Concentrating in virtual classes was not easy for most of the students, even before the pandemic it was difficult to concentrate, so we also decided to ask whether it was possible for students to concentrate in the classes. We obtained 55% less than usual and 12% much less than usual to be able to concentrate as shown in graph 7.

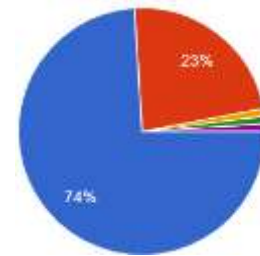


Graph 7 Percentage of students' concentration in virtual classes

However, we also found that 25% of students have found it equally difficult to concentrate and 8% have found it easier to concentrate using this method.

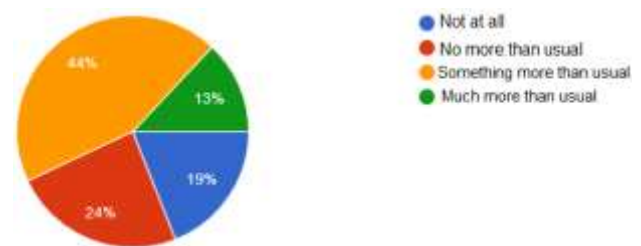
The students have not only decreased their performance and concentration, but it has also affected their mental health, with problems such as stress, anxiety, frustration, tension, etc. This is caused by constant homework, work, problems at home, difficulty in accessing classes or the media, being able to go out with friends or visit family, etc.

We decided to ask if the students had any of these types of health problems, to which 74% responded yes, as can be seen in graph 8.



Graph 8 Percentage of students who present some kind of mental health problem

23% said that they did not have these problems, while the other 3% said that they had these problems depending on the situation. They were also asked if they felt tired or under stress, to which we obtained the following answers in graph 9.



Graph 9 Percentages of students with tension and stress

We obtained high percentages of those who tell us that there are also mental health problems, personal or other types of problems, causing these ailments.

We asked what types of media they used and how they adapted to the new communication model, to which we obtained answers that all the students used and use their mobile phones to communicate, using social networks (Facebook, Instagram, Messenger, WhatsApp) and what made them feel better and helped them to overcome the confinement was spending time with their friends, going out to the parks, doing some activity that they enjoyed.

They also told us that it was difficult for their families to adapt in the same way to this new modality at the beginning of the pandemic, but today they are completely adapted and communication is better established.

Finally, the students told us what they miss about the online classes, to which we obtained responses such as:

- They were comfortable, as I avoided travel time and felt more comfortable at home.

- I had everything at hand, I didn't miss anything.
- I enjoyed my free time more without complications.

We also surveyed some of the university's lecturers about what online classes were like for them, to which they commented:

- They were a drastic change:
 - a. They were a drastic change, however they were not as efficient as face-to-face classes.
 - b. They were limited
 - c. They were enjoyable, with difficulties when students did not want to participate or attend the activities.

In the same way, some of them also had problems such as stress and tension, although they also told us that there were good things such as the economic savings, doing sport, the ease of travel to meetings, among others.

We have come to the conclusion that the pandemic and the virtual classes brought with them new challenges and problems, but also taught us to adapt and to know how to overcome each of them.

Results

As results, we found that the educational level has been affected in different ways, not only because of the pandemic, but also because of school dropout due to different reasons such as; economic resources, personal problems, lack of interest, lack of support, etc.

Given this, we decided to carry out a quantitative analysis, in which 100 people from our school participated in the survey with the aim of analysing how virtual education has affected them and how they have adapted. By conducting the surveys, we obtained information and gave us a wide scope to obtain varied responses, with which we have realised that being in confinement has not only affected school performance, but also their concentration and affected their mental health, because most of the people who took the survey, say they have symptoms such as stress, frustration, overwhelm, among others.

We also understood that the way in which the students adapted to the confinement was to talk to their friends through social networks or to carry out some activity of interest.

Conclusions

The pandemic that surprised us with covid-19 caused the way of life to change, bringing us to a sudden confinement, making our whole way of life take a radical change.

All this surprised us by adapting new roles at home, social roles were modified and social-motor skills began to diminish, especially for the youngest members of the household. The new adaptation of teaching made learning and understanding more expensive, many of the students, especially in rural areas, had very little access, as due to the fact that the classes were online they could not access many of their classes due to lack of resources (computers, mobile phones or televisions, etc.). Teachers were also affected by this situation, many of them doubled their hours of work and effort in order to teach all their students.

Another problem caused by the pandemic was mental health problems, as mentioned above, which have had a great impact on pupils and even led to them dropping out of school. The return to face-to-face classes has been slow and they have realised that the teaching in the previous cycle, which was virtual, did not produce many results.

With their classmates and teachers. One of the main properties of this pandemic disease, unlike other pandemics that occurred in previous years, is the monumental communication network available to us, which was undoubtedly key at several points and, in addition to social networks, allowed us to be informed almost in real time.

The challenge facing teachers in Mexico is very great, to reinforce learning and continue to make progress with respect to the year they are studying will be a problem to which they will have to find an optimal solution in order to continue making progress with the students on a daily basis.

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