

## Impacts on higher education teachers of the implementation of online education, arising from the COVID-19 pandemic

### Impactos en docentes de educación superior, de la implementación de la educación en línea, surgida a partir de la pandemia del COVID-19

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#### Abstract

The pandemic derived from the Sars-CoV-2 virus has affected all human and social dimensions, both in health and in the economy, different social phenomena and the educational process. In this project, the results of the research carried out to the teachers of the Technological University of the Central Valleys of Oaxaca are presented, in order to know the academic and non-academic difficulties they have faced during confinement when teaching, in a distance educational model generated from the health emergency. An instrument was designed to collect the information. The instrument has 145 items referring to general information, technology at home, online and home classes, students in this pandemic, well-being, training and learning, and types of support. The research is cross-sectional and descriptive. As a result, the disparity of conditions for accessing the Internet and the availability of technologies, the complexity of the lack of adequate physical spaces, as well as the fusion of work, home and family activities are observed. In addition to the necessary training in the development of their daily teaching activities, technologies and strategies. All of this has generated worrisome psychological symptoms and reactions.

**Teacher difficulties, COVID-19, Online education**

#### Resumen

La pandemia derivada del virus Sars-CoV-2 ha tenido afectaciones en todas las dimensiones humanas y sociales, tanto en la salud, como en la economía, los diferentes fenómenos sociales y el proceso educativo. En este proyecto se presenta los resultados de la investigación realizada a los docentes de la Universidad Tecnológica de los Valles Centrales de Oaxaca, con la finalidad de conocer las dificultades académicas y no académicas a las que se han enfrentado durante el confinamiento al impartir clases, en un modelo educativo a distancia generado a partir de la emergencia sanitaria. Se diseñó un instrumento para recabar la información. El instrumento cuenta con 145 reactivos referente a información general, tecnología en casa, clases en línea y hogar, estudiantes en esta pandemia, bienestar, capacitación y aprendizaje, y tipos de apoyo. La investigación es tipo transversal y descriptiva. Como resultado se observa la disparidad de condiciones para acceder a internet y disponibilidad de las tecnologías, la complejidad ante la falta de espacios físicos adecuados, así como la fusión de actividades laborales, del hogar y familiares. Además de la necesaria capacitación en el desarrollo de sus actividades diarias de enseñanza, tecnologías y estrategias. Todo esto ha generado reacciones y síntomas psicológicos preocupantes.

**Dificultades de docentes, COVID-19, Educación en línea**

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**Introduction**

On March 14, 2020, given the global spread of COVID-19, and with the aim of helping to preserve the health of children, adolescents and young people, as well as the rest of the community in all educational establishments in the country, the The Ministry of Health and Public Education of the Government of Mexico presented the priority prevention and care measures and, in response to the recommendations and measures implemented by the WHO, they reported the school recess initially for the period from March 23 to April 17 (Secretariat of Public Education, 2020)

Schooling resulted in one of the areas affected early on by the impossibility of maintaining the minimum distance required to guarantee the necessary conditions to avoid risks of contagion among the educational community. In the case of teachers, school support in their respective families occurred simultaneously with the adaptation of teaching work and the maintenance of pedagogical work (Gluz et al., 2021).

The development of a distance education model by Higher Education Institutions did not consider that teachers were not prepared for this function, due to problems of technological knowledge, equipment, connectivity, and even emotionally.

The inequality gap not only occurs between the student community, it also occurs between teachers of various educational levels, several studies address the effects of COVID-19 in the educational system, in the learning processes of students, However, little is said about the difficulties and challenges that teachers face every day.

The objective of the research is to know the academic and non-academic difficulties that the teachers of the Technological Universities Los Valles Centrales de Oaxaca (UTVCO) have faced during the confinement when teaching classes in the distance education model.

**Background**

On March 11, the World Health Organization (WHO) declared the COVID-19 epidemic as a pandemic and as a Public Health emergency of international importance (Ministry of Health, 2020)

According to the Economic Commission for Latin America and the Caribbean, for its acronym (Economic Commission for Latin America and the Caribbean, 2020) digital technologies have been essential for the functioning of the economy and society during the crisis of the pandemic by COVID-19. The networks and infrastructure of communities are used more and more intensively for productive, educational, health, relationship and entertainment activities. The mobility data during the first months of quarantine shows a world paralyzed in the physical, but not in the virtual. Website traffic and use of telecommuting applications, online education and online shopping reveal a significant increase in the use of digital solutions. In the first and second quarters of 2020, the use of telecommuting solutions increased 324% and online education more than 60%.

In Mexico, the government deployed a national strategy for remote educational continuity through television, complemented with access to digital platforms such as Google and educational local radio programming, with programs for teacher professional development in the basic use of platforms and in ICT skills for teachers. These strategies were due to the fact that 56.4% of households have internet access, 92.5% have access to a television. However, 57.3% of the students did not have access to the computer, television, radio or the telephone. (Reimers, 2021).

**Theoretical framework**

The World Health Organization (World Health Organization, 2021) defines coronavirus disease (COVID-19) as an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus experience mild to moderate respiratory illness. Older people and those with underlying medical conditions such as cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illnesses.

Connectivity, understood as broadband service with a speed, conditions the right to health and education at the same time that it can increase socioeconomic inequalities. The difference in connectivity between urban and rural areas are significant. In urban households there is connectivity of 67%, in rural areas 23%. Teleworking has been a fundamental tool to keep some companies running. Due to the suspension of face-to-face classes, the countries developed strategies to sustain distance education classes. Countries that did not have educational content platforms found it necessary to use platforms in cooperation with companies such as Microsoft, Cisco and Google. The difference between the highest and lowest economic strata conditions the right to education and deepens socioeconomic inequalities (Economic Commission for Latin America and the Caribbean, 2020),

Many teachers were not qualified to transition to teleworking. This lack of preparation is due to many reasons, for example, the fact that not all households are prepared to use the technical requirements related to the use of information and communication technologies and that it is not always possible to maintain a comfortable environment for teleworking. Sometimes a greater workload is required due to the adaptation difficulties of the professional or the student, due to isolation and social distance. In addition, being at home, the teacher must also deal with several other factors, such as the presence of more people in the same space, such as children and spouses who in turn are subject to telework and distance study regimes due to isolation and the distance disposed by the pandemic (Dos Santos Santiago Ribeiro et al., 2020).

Teleworking, (home office) or remote work has had a high psychological and social impact on the lives of teachers. The incorporation of the new teaching modality generated radical changes in educational interaction. Some suffered difficulties because they did not have the necessary technological resources to fulfill their purpose. Some teachers invaded the feeling of helplessness when hearing their students express the impossibility of having access to virtual classes because they lacked the necessary means to continue with their studies.

A very commendable task that the teachers implemented was to double the working hours, which included adapting the contents of their face-to-face subjects to emergency remote learning, the prolonged use of virtual platforms, the assignment of tasks, the way of evaluating them and the delivery of results; All these aspects that influenced the success of the assignment resulted in an exhausting task for the entire teaching body, the physical and emotional exhaustion was greater, which generates a mental state that brings with it high psychological and emotional consequences (Chávez Orozco, 2016) .

One of the phenomena most presented in the teaching body as a consequence of the exhausting dynamics of telework is work stress, this being the response that the person has to the demands of their work that do not conform to their skills, and where they are put to work of judgment their ability to cope with any situation. This is the result of the instability between the demands and pressures that the individual faces, on the one hand, and his knowledge and capabilities on the other. As much as stress affects the immune system, feeling tired or depressed, problems falling asleep, etc. (Robinet-Serrano & Pérez-Azahuanche, 2020).

A manifestation of stress in human activity is through symptomatic pictures, following the classification of Isabel Paula who speaks of four most common: a) Psychosomatic symptoms: they are related to problems sleeping, digestive, eating, body, heart palpitation; physical manifestations, but of psychological origin such as headaches, muscle aches, gastritis. b) Behavioral symptoms: it resides in avoiding situations out of fear, walking out of anxiety, drinking coffee, alcohol, pills, extreme actions that can damage their physical integrity, aggressiveness and absenteeism and work lateness. c) Emotional symptoms: the performance of affections; distancing from people, low tolerance for frustration, fatigue, guilt, self-esteem problem, loneliness, disorientation and depressives, etc. d) Cognitive symptoms: it is characterized by content in their negative thoughts, in themselves and in others, in study habits such as thinking, concentrating, irrational ideas, frequent forgetting (Quiroz-Zambrano & Vega-Intriago, 2020).

Stress affects all work activities, however, it affects those activities related to the provision of services such as education, health services and healthcare; the same that when it reaches chronic levels (chronic work stress) can give rise to the appearance of Burnout syndrome or being burned by work; also accompanied by a series of physical and psychosomatic symptoms (Chávez Orozco, 2016).

COVID-19 brought as a consequence that everyone's lifestyle will be modified, education at different educational levels totally changed, taking the entire population by surprise, the home became an educational space where classes are held, Administrative activities are carried out, schedules were disrupted, the boundaries between home and work blurred, all of the above in order to meet the requirements and objectives that current education demands. (Chávez Sánchez et al., 2020).

## Methodology

The research methodology used is cross-sectional and descriptive, based on the application of a digital survey developed on the google platform, and sent by digital means.

The Technological University of the Central Valleys of Oaxaca (UTVCO) is located in the municipality of San Pablo Huixtepec, belonging to the Central Valleys of Oaxaca, a rural region that in principle has internet connection services globally.

The UTVCO is 12 years old and is made up of 8 academic programs such as: 1) Business development, 2) Gastronomy, 3) Information technology, 4) Mechatronics, 5) Sustainable and protected agriculture, 6) Processes food, 7) Design and industrial fashion, 8) Renewable Energies and a total of 85 teachers with permanent and non-permanent contracts.

The participation of teachers in this research was 59 teachers from all educational programs, exceeding the sample that was calculated at a confidence level of 90% with a margin of error of 6%.

For its part, the instrument was designed with 145 items in 8 sections: 1) General information, 2) Strategies used, 3) Technology at home, 4) Online and home classes, 5) Students in this pandemic, 6) Well-being, 7) Training and learning, and 8) Support.

The application of the survey was developed in September 2021, yielding the following results.

## Results

The results obtained from the instrument applied to UTVCO teachers are presented. The universe of teachers studied shows us that the UTVCO has a young teaching staff, with an equitable distribution between men (50.8%) and women (49.2%), where 66% are between 25 to 35 years old, 28.8% are between 36 to 45 years old and only 5% are older than 46 years, so in accordance with the above, 61% have a seniority in the university 5 years or younger. The teachers are assigned to the Business Development career, 15.3% gastronomy, 11.9% information technologies, 10.2% mechatronics, 10.2% sustainable and protected agriculture, 8.5% food processes, 8.5% administrative area, 6.8% Renewable energies, 5.1% design and industrial fashion.

The platforms to teach online that are most used by teachers is the Google platform (Classroom and Meet) with 90%, about 50% use Zoom, 33% use Microsoft Teams. A relevant finding is that in general women have mainly used the Google platform, and men have diversified the platforms they use, being the main users of Microsoft Teams.

The main means of contact with students is WhatsApp, more than 80% of the teachers consulted state that they use it. Other means used to contact students are Google platforms (classroom and meet), emails, and to a lesser extent Facebook and Microsoft teams.

The strategies proposed for students with connectivity difficulties are mainly to increase the delivery period for tasks, use of text messages or social networks and emails, to a lesser extent telephone calls.

Among the teachers' equipment, it is found that the majority have one or more televisions in their homes (93.2%), one or more cell phones (98.3%), one or more computers (96.6%), the majority say they do not own Tablets (they only have a total of 49.2%) and with printers (they only have 54.2%).

Regarding the internet connection, 8% of teachers state that their connection is with the use of cell phone data, while the other 92% state that they have a fixed access either by wire or wireless.

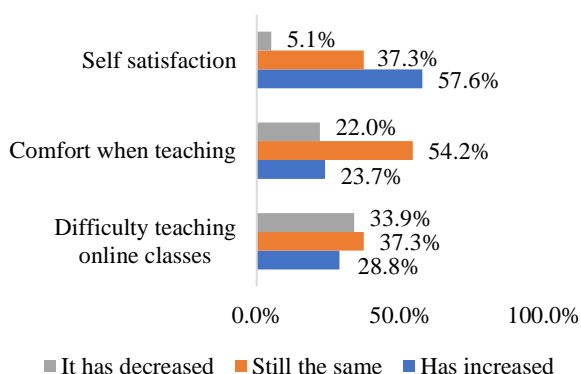
Regarding the quality of the internet, it is only stated that it is used for basic functions, but a significant number of teachers do not have a good quality internet for their assigned functions (taking into account that the internet connection is the responsibility of each teacher, and it depends on the conditions offered by internet providers at your home). What is manifested as an adequate internet for the different functions is the following: 81.4% to send and receive emails, to operate institutional systems to upload grades and attendance 76.3%, to send a file to a platform 69.5%, to maintain a video call 64.4%, to view content (youtube) online 64.4% to present a virtual class 61.1%, to load several pages at the same time 45.8%

In the distribution of times, the home office modality has modified them, since 86.4% of teachers admit that they have dedicated more time to work, largely taken from personal time since 59.3% recognize that they have had less Personal time than before the pandemic, and in terms of family time, 32.2% recognize that they have dedicated more time to their family, while 45.8% indicate that less time. In this last point, if you see a marked increase in the time spent with the family of men compared to women (while those who spend the same time or less time with the family between men and women is very balanced, between 4 to 8 percentage points of difference, in the case of those who dedicate the most time, 58% are men versus 42% of women, 16 percentage points of difference).

The challenges that teachers most identify are the following: First, maintaining a regular schedule, followed by internet connectivity, communication with students and distractions at home, in that order of importance, leaving elements in the background such as how to collaborate with other teachers, not having access to tools to provide a better education and social isolation.

The teacher in general states that his main emotional support in this pandemic has been his partner in the first instance and the family in general as a second instance.

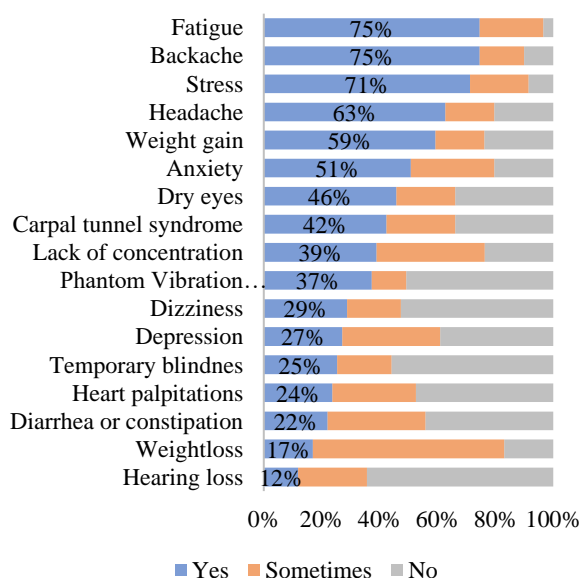
Perception of online classes



Graphic 1 Perception of online classes  
Source: Own elaboration

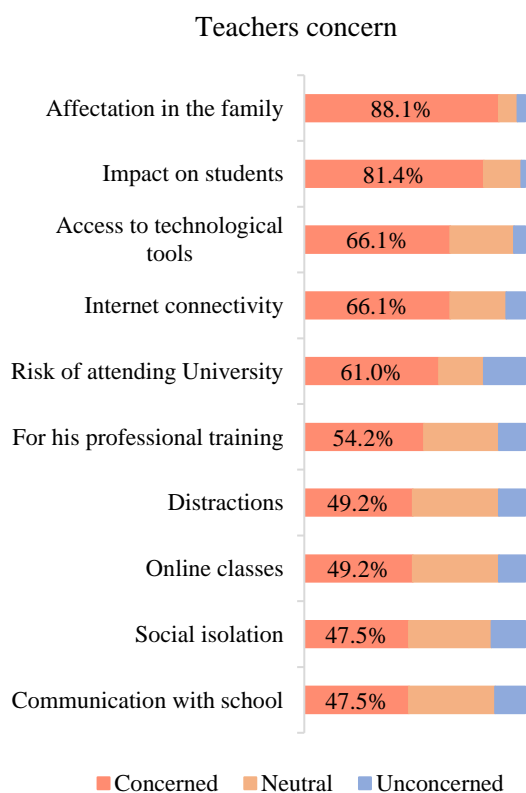
Currently, teachers continue to think that the difficulty of having online classes is the same (37.3%) or more difficult than before (33.9%), however, they state that they are already comfortable (54.2%) teaching classes in this way, and that they have also been very satisfied with being able to teach their classes virtually (52.5%) to moderately satisfied (37.3%)

EXPERIENCED SYMPTOMS



Graphic 2 Experienced symptoms  
Source: Own elaboration

Among the symptoms most experienced during online work, teachers report experiencing fatigue with 75%, followed by stress with 71%.



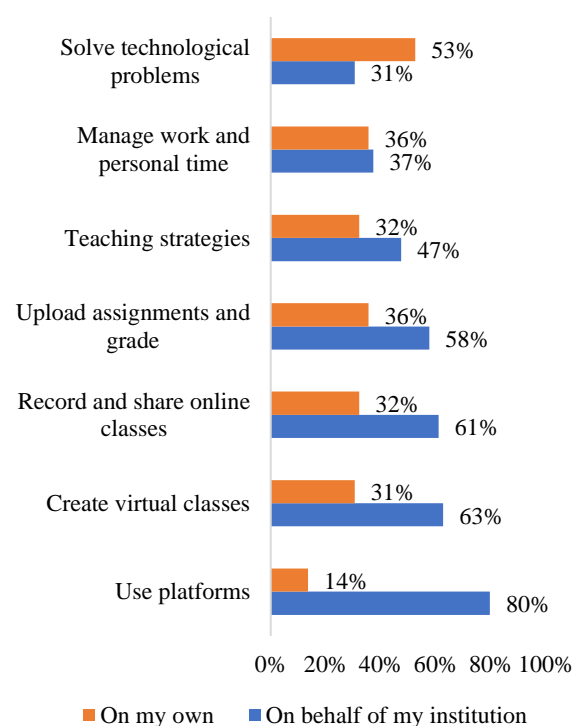
**Graphic 3** Teachers concern

Source: Own elaboration

88.1% of teachers are concerned about the impact that online classes generate on their family, followed by the impact that it generates on students, represented by 81.4%.

Among the challenges that teachers currently face are the following: Mainly with regard to their own health and that of their family, socio-emotional challenges and thirdly economic ones, considering to a lesser degree academic, technological and attitude personal.

### Training received



**Graphic 4** Teachers concern

Source: Own elaboration

Teachers have stated that their main learnings are mainly being able to learn online, the ability developed to restructure their classes, the use of digital tools, time management, organization and their ability to adapt.

### Conclusions

As mentioned, the educational institutions, teachers and students were not prepared for the changes derived from the health restrictions caused by COVID-19, however, from the perspective of teachers there are various situations that require special attention. Not all teachers are on an equal footing, which is a limitation. The lack of adequate physical space to prevent noise and distractions during the performance of their duties. The fusion of home, family and work activities in coordination with the daily online activities of all family members. The lack of attention from the authorities in aspects related to the health and well-being of teachers and the lack of support has been the constant struggle of teachers.

The workload has exceeded the time allocated in face-to-face classes.

In general, we can observe that the teachers of the UTVCO have mainly been able to adapt to the conditions required to continue with the educational process within the pandemic, since they do not have the best conditions of equipment, or internet connection, with the limiting working conditions from home (distractors, noises, family time, etc.), without adequate training or skills developed, however we see how, when initially adapting, they looked for training spaces beyond what the institution itself got them. There being aspects such as solutions to technical problems that the training was done largely on its own. Currently they feel comfortable, and above all satisfied with their work, although they recognize it with greater difficulty than they were used to, we also see that this process has had a cost in the health symptoms experienced, presenting generalized symptoms such as fatigue, stress, physical pain and anxiety and weight gain. Generating concerns in the health of his family and his students, as well as his academic activities. From the teacher's perspective, the transformation of education has been accomplished, and perhaps with the appropriate support, there will be a greater impact on teaching.

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