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DISTANCE EDUCATION DURING THE COVID 19 PANDEMIC, FOR NEWLY ENROLLED INDUSTRIAL ELECTRONIC ENGINEERING STUDENTS AT ``UNIVERSIDAD AUTÓNOMA DE ZACATECAS``

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Abstract: The present work aims to carry out a diagnosis of the main difficulties and strengths that new students have faced in the Industrial Electronic Engineering Academic Program of `` Universidad Autónoma de Zacatecas``, after the sanitary isolation provisions due to the COVID 19 pandemic, and to know how teachers have adapted their teaching practice to comply with the academic programs in each of the courses.

The main difficulties that have been detected are: the internet service, the fact that the student has their own computer equipment, that at home they have a space to attend their classes without distractions, the feeling of feeling isolated, without the opportunity to clear up doubts with their teachers and share their learning with their peers. Among the strengths, a group of students stands out who, being isolated, efficiently carry out their activities, excellent communication is required from the participating actors.

Keywords: Distance education, Information technology, Adapt teaching practice, Timely communication.

INTRODUCTION

According to the World Health Organization, COVID 19 is the most recently discovered infectious disease caused by the coronavirus. Both this new virus and the disease it causes were unknown before the outbreak broke out in Wuhan, China, in December 2019. Currently, COVID 19 is a pandemic affecting many countries around the world. Most people (about 80%) recover from the disease without the need for hospital treatment. Around 1 in 5 people who contract COVID 19 end up presenting a serious condition and experience difficulties breathing (WHO, 2019) In Mexico, 2 out of 3 patients who are admitted to the hospital lose their lives due to the virus. The first case reported in Mexico was on February 27, 2020.

As of that date, the degree of contagion and the percentages of deaths spread rapidly as well as throughout the world. On March 19, the Autonomous University of Zacatecas indicated to suspend face-to-face activities and it was decided to finish the course at a distance, an issue for which few were prepared, although fortunately they were trained.

It was necessary to use information and communication technology, conceptualized as that which makes use of telecommunications equipment and computers (computers) to store, process and transmit information through different networks, in order to complete the school year. The use of ICT allows the development of new ways of teaching and learning, this significantly improves education, because the student has an impressive amount of information at hand, but the ability to critically appreciate the information must be developed in the student, so that it can be adapted to the context and thus develop new knowledge from it, so that the aforementioned has adequate results, the teacher must also be related to the involvement of these learning processes, which must be permanent as far as regarding the relationship with technology, its uses and risks. With the incorporation of ICT in education, the interaction of the students is facilitated, between themselves and the teacher, it also favors the development of creativity using new tools in their presentations such as audios, videos, etc. Education becomes flexible with the use of technology because the barriers of time, space and use of conventional classrooms are broken, it allows to cover great educational demands in places that require educational offer, providing opportunity and response to the dynamic and challenging world to which academic development, thereby achieving greater competencies (Beltrán, L. 2017)

Thanks to the emergence of information technologies, education has been available to everyone since virtual classrooms appeared, since through this they have access to different specialized programs or software that will improve student learning, but it is necessary to have Keep in mind that the information must also be used and sometimes it falls into digital literacy, this literacy that there are still people who do not know the minimum handling of a computer.

Distance education is a teaching-learning system that is partially or totally developed through information and communication technologies (ICT), under a two-way scheme between teacher and students. This system replaces the model of personal interaction in the classroom with one of tutoring that makes the student responsible for their own training (Vázquez. E. 2018).

With Distance Education it was possible to conclude the January-June semester; and it became necessary to plan the August-December semester in detail. We are talking about the Higher Education System in Mexico is made up of 6,404 institutions; 2,455 public and 3,949 private, attended by a total of 4.7 million students served by 429,495 teachers (Undersecretary of Higher Education, 2020)

After the pandemic and the decision to continue distance education, the Carolina Foundation finds 3 main problems:

1) That both teachers and students have computer equipment and connectivity.

2) Although higher education has had a greater presence and demand, its diffusion was mainly in postgraduate courses and in a few universities, but not at the undergraduate level.

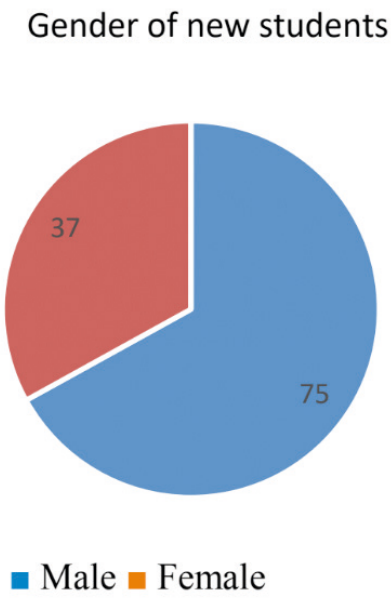
3) The teaching and student competencies in distance education that are necessary: management of technology, timely communication and a high degree of responsibility on the part of the student.

METHODOLOGY

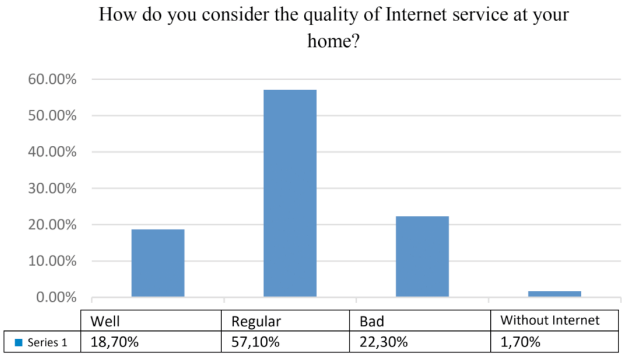
A diagnosis was made in new students to the Industrial Electronic Engineering Academic Program using an online survey, to a total of 112 first-semester students, distributed in 4 groups, being 37 women and 75 men, 84.8% residing in towns of more than 50,000 inhabitants with internet service, the rest 15.2% in smaller localities with some inconsistencies in the network service. They were surveyed to find out the conditions in which they are attending their online classes from home. It was a quantitative and descriptive study.

RESULTS

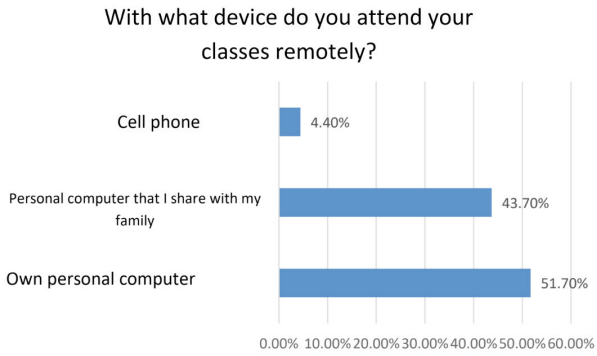
The results of the survey are shown in the following graphs.



Graph 1 Gender of new students, 75 male and 37 female.

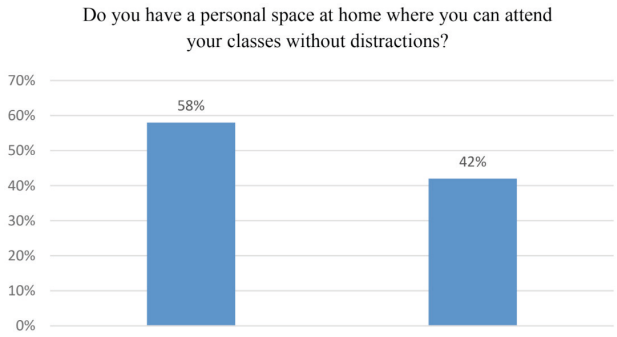


Graph 2. Shows the quality of the Internet service at the student's home.

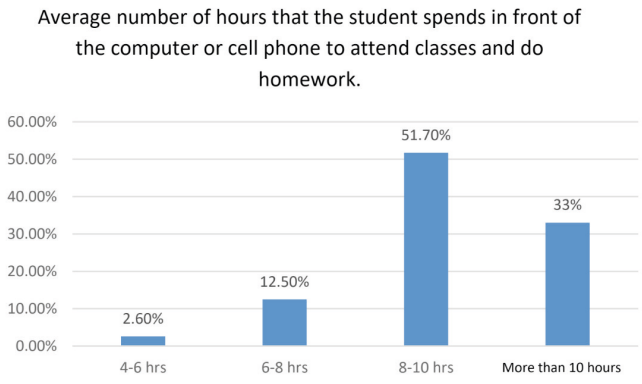


Graph 3. Shows what device they have to attend their classes.

Note: 87% of students use a computer and cell phone simultaneously.



Graph 4. Percentage of students who have or do not have a private space to study.



Graph 5. Shows the average number of hours that the student is in front of the computer to attend to his classes and homework.

Below is a table that contemplates the main difficulties that students faced during distance classes.

Main difficulties you have faced in your online classes.	
There is a computer and good internet connection	58%
Management of technology and educational platforms	4.4%
There is not the teacher in person to clarify doubts	62.5%
There is not the classmates nearby to study and clarify doubts	26.7%
There is not an appropriate space at home to attend class	40.1%

Table 1. It shows the main difficulties to attend the online classes according to the students.

The results show that about 57.1% of the students consider that the internet service at home is regular, 22.3% bad and only 18.7% good, two students do not have the service at home. 51.7% attend their classes with their own computer, 43.7% share a computer with other family members, and 4.4% use a cell phone; 58% have a space at home where they can attend class without distractions, the rest do not; the average number of hours spent in front of the computer, attending classes and doing homework, has been a constant complaint from the participants: 4 – 6 hrs. 2.6%, 6 – 8 hrs. 12.5%, 8 – 10 a.m. 58% and more than 10 hrs. 33%. They refer that the main difficulties they have faced are not having their teacher in person for 62.5%, not having a computer at home and a good internet connection for 58%, not having a personal space at home to 40.1% attend class, 26.7% do not have classmates nearby to study and clarify doubts, and 4.4% have difficulties in managing technology and educational platforms. Finally, an early dropout of 17 students who abandoned their classes in the first 3 weeks for not adapting or not having the necessary elements to receive distance education is reported.

SOME RECOMMENDATIONS FOR DISTANCE CLASSES

In order for education to be provided effectively, communication between teacher and students is required to be timely, clear, precise, concrete and that it be given by more than one distance educational medium, anticipating possible connectivity failures, be specific when indicating by what media can be served. Classes can be taught through videoconference in various services, even free, choose and train in the use of one; giving students the opportunity to participate and ask questions.

Continue supporting the health authorities and helping the population, health comes first.

Continue offering teaching, research and cultural dissemination activities with the support of a wide range of technological tools such as: virtual classrooms, remote communication platforms, repositories, libraries and digital materials, among others.

In educational platforms, a subject can be planned, with the class study materials, the activities to be carried out with their clear indications, and the delivery dates of tasks and projects (it is recommended that they have a period of 3 to 4 days for delivery considering some difficulties that the student may have) and with online exams. Be very clear in the way of evaluating each activity and its

characteristics. It is important to define from the beginning with which videoconference and platform the course will be used, as well as to create a group in a messaging service to communicate any eventuality.

Address the UNESCO recommendations to address the emergency facing the population in the face of COVID 19, based on four principles: flexibility, inclusion, equity, and priority for vulnerable groups.

The ANUIES (2020) recommends that the authorities of higher education institutions:

a) Make the processes and calendars for educational evaluations, graduation processes, registration and re-registration more flexible.

b) Facilitate the completion of school and administrative procedures completely online.

c) Adjust the goals of the study plans, prioritizing the essential contents during the contingency period, foreseeing academic regularization and school releveling activities.

d) Diversify learning strategies and instruments.

e) Prepare an action plan to serve and monitor students from the most remote communities and especially those who lack computing devices and connectivity.

FINAL COMMENTS

Distance students were attended for 2 years, educational lag rates are shown that will be very important to address with educational regularization strategies. Society demands graduates with the knowledge, skills, attitudes and values that their profession demands and it is the commitment of the educational institutions that the student achieve it.

CONCLUSIONS

COVID 19 came to replace face-to-face education with distance education, the use of ICTs allows to be in contact with the student. Planning a distance course requires technology management and having acceptable connectivity. It becomes necessary to design the courses for videoconference and educational platform, and to be flexible in terms of delivery times for work and projects, considering the particularities of each student. In this new educational modality, timely communication is one of the most important factors. The mission of every educational institution is to train its students in an integral way, which is why it is proposed to do it remotely, with the condition that, in the first place, care for the health of the population.

We have connectivity problems, technology management and a feeling of isolation on the part of our students, so it is proposed to take these difficulties into consideration when planning each of the subjects.

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