**Review Article**

# Viscissitudes in the Transition from the Presential to the Educational Virtuality Caused by Covid-19 in the Mixteca Region

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## Abstract

Democracy is desirable political behavior, which is considered behavior that promotes and supports the development of democracy. Especially in developing countries that focus on improving civic behavior in line with democratic directions. However, economic philosophy is one concept that, when considered, has the following essential elements consistent with the principles of democracy: Reasonableness, Sufficiency, Immunity, Knowledge, and Moral Ethics. This research was conducted in the North-Central region, Thailand. The results of the study revealed that the factors affecting the integration of the Sufficiency Economy Philosophy into the democratic way of the people are Political democratic way of life, perception of sufficiency economy philosophy, life with immunity, job security, frequency of merit-making, living with knowledge and virtue, number of roles in the community, gender, age, Attitude towards Sufficiency Economy Philosophy, Family Size [1].

**Keywords:** Social and Educational Isolation; Mixtec Region; Educational Technology; Generation "Z"

## Introduction

The social, preventive, and mandatory isolation due to the Covid-19 pandemic has impacted the educational field, highlighting the need for teachers, who had applied classical teaching methodologies in a face-to-face educational system, to master technological tools. Classical teaching methods are of great value in face-to-face education [1]. However, under a context of isolation and educational confinement, the "classical teachers" struggle in the attempt to appropriate and understand the use of educational technology, unlike the technological competencies manifested by Generation "Z" university students, whose appropriation and use of ICT contribute to their learning process. Isolation not only affects the teacher-student binomial, but also the managers of higher-level educational institutions who face a complex situation when organizing, coordinating, and communicating to their teaching staff the tasks of academic management and the teaching-learning process [2]. All the actors involved in this educational process have redefined their roles and activities, including the home environment that has become the classroom, where the teaching process is continued through educational technologies strongly supported by educational virtual platforms, and Internet. In the educational process, it becomes more important to conceptualize the organizational structure of educational institutions on a substantial technological platform where terms such as "network society", "virtual space", "digital natives", "digital culture", among others, are developed. Virtuality is a coadjuvant approach in the teaching process of any educational institution, but it also reveals factors of inequality between teachers and students who are formally prepared with educational technology and between those who do not use and/or have no access to and technological goods and services. In Mexico, the Ministry of Public Education (SEP) [3] is responsible for the application of the General Education Law, and one of its challenges in educational policies is to overcome the digital divide through the use and implementation of ICT in the educational system. However, the Covid-19 pandemic has revealed that a significant percentage of students do not have access to the minimum technologies necessary for their academic training, and therefore the breadth of the digital divide is a serious problem due to the confinement at home of Oaxacan students [4].

## Methodology

The context of this study is the Technological University of the Mixteca (UTM), which belongs to the State University System of Oaxaca (SUNEO). UTM is located in the Mixteca Region, one of the regions with the highest rate of migration, poverty, and educational underachievement in Mexico (CONEVAL, 2015). The degree of availability and adoption of Information and Communication

Technologies (ICT) is complex because it depends on the context in which the appropriation of the technology and the impact on the existing infrastructure is generated. In the state of Oaxaca, three contextual zones are distinguished: urban, rural, and indigenous. The indigenous area is the one that presents extreme to medium digital poverty, due to the null or medium telecommunications infrastructure through which the indigenous student population can make use of digital technology in education. In the state of Oaxaca there are 16 indigenous peoples that together are 1,734,658 inhabitants, that is, they represent 43.7% of the total population distributed in 2,563 localities (INEGI, 2016) [5]. In addition, in the Mixteca Region, 77.4% of the population lives in small rural communities scattered over the region with less than 2,500 inhabitants (COPLADE, 2017). This panorama is confirmed with the information provided by the students of the study samples included in this research, in which it has been identified that 65.6% of the students come from urban areas (mainly from the city of Oaxaca and Huajuapan de León) and 34.4% come from rural areas. In this research, a qualitative methodology is applied under a prospective study and a descriptive analysis, taking as a case study a teacher in the area of Social Sciences and Humanities and first-year students in the Bachelor of Business Sciences program. This research has made it possible to analyze the impact of technological competencies on the learning process of the students that make up the so-called Generation "Z" (students born after 1995), who are currently in the first semesters of university studies. This generation of students is carrying out their studies under conditions never before experienced, generated by the COVID-19 pandemic. In addition, the competencies of the full-time face-to-face teacher who has had to reinvent himself in response to the closure of the physical spaces of the university have been analyzed.

## Technology and Culture

### Technology

The concept of technology is closely linked to the concept of scientific knowledge. The word derives etymologically from the Greek term "tekné" (Technique), which means "art or trade", and from the term "logos", which means "knowledge or science". According to Sarramona (1990), technology unites two basic elements that are: "doing" (art or trade), and "Saber" (knowledge), that is, "knowing how to do". López (2001) quotes Archer (1986) [6] who defines technology as a "science bridge", or "third area". The establishment of technology as a third area next to the sciences and humanities is justified not so much in the existence of different objects of study, as it is for the approach to knowledge from technology, the way of knowing is different. While science is the body of theoretical knowledge based on observation, measurement, and experimentation, and the humanities is the body of knowledge based on contemplation, criticism, evaluation, and discourse, technology as a third area, is the body based on sensitivity, invention, validation, and implementation. According to Bunge (1995), technology is the field of knowledge related to the

design of artifacts and the planning of their realization, operation, adjustment, maintenance, and monitoring based on scientific knowledge. Therefore, it is understood that technology is oriented to the study of scientifically proven processes and techniques, in order to prescribe standards to change and improve reality through rationally mediated and controlled actions [7]. According to Navarro (1996), while science is a knowledge system, technology is a system of actions aimed at achieving objectives. Likewise, the author quotes Quintanilla (1983) when arguing the following definition: "A technology is a system of human actions intentionally oriented to the transformation of concrete objects to efficiently achieve a valuable result." Under this conception, technology has a set of instruments that take the character of artifacts, which are the result of technological action [8]. However, the fact of performing human actions by means of instruments or tools is not sufficient to be considered a technological action, it is necessary to have a scientific foundation.

### Culture

The influence of culture, and what this implies with respect to its values, are also found and are derived from the concept of technology, scholars such as Mèlich (1998), and Pabikkar (1991) make the following reflections: Mèlich (1998) [9], "Technology implicitly carries values that are necessarily imposed on everyone who moves according to its guidelines. Fundamental to these values are effectiveness, efficiency, usefulness, progress, speed, etc. Elements that become more important when teaching-learning processes take place in virtual spaces, as stated in this research. Technology, which began as the "science of technology", now becomes a "technocratic system". Mèlich (1998) considers technology as a system with monopolizing tendencies of knowledge, when he argues: "The individuals who live in the technocratic empire end up becoming dependent on this same system, to the point of being unable to survive outside it. Technology offers power and gives security. Technology fascinates. Technological power is fascinating in the eyes of the beholder. It is not difficult at all to become faithful to its cult, to its idolatry. " This statement is shared in the present investigation [10], since in the study carried out on first-year students it was detected that indeed the new generations of students have been captivated by technological power, specifically the use of the Internet. First-year students have stated that in the development of their academic activities and in their academic process, the Web is an important tool for finding information in order to solve the problems raised in class or in the development of their academic activities. In this nascent idolatry, the student is conferring on the Internet the power to find all the answers to their questions and problem statements [11], a fact that on the other hand diminishes their capacity for creativity, innovation, and development of logic.

## The Network Society And The University

The technological revolution and specifically ICT are closely related to the nascent forms of organization that society has

adopted. The effect of virtualization in the different areas of the human being constitutes a niche for the new culture immersed in what is now called the network society. The university is a higher-level educational institution that is immersed in the demands of the network society through the Internet as a technological source of communication and information. The Internet impacts the context and management of the university by transforming its organization and the methodologies applied by teachers. One of the main characteristics to which the name "network society" [12] is due is found in its basic structure, that is, its interconnection logic. The present case study has been implemented in a network of SUNEO universities, which have been designed under the same academic model as UTM, where the core of its genesis revolves around technological development and its interconnection infrastructure. In this SUNEO network, joint action prevails between the network that is developed between academics and students. These indications still occur under a conservative and traditionalist scenario, where decision-making is centralized. However, thanks to the facilities provided by the technological infrastructure of each of the universities that make up SUNEO, and the opening of transparency in government actions and public institutions, the dynamism of actions and exchange is increasingly evident. Especially in the case of information and collaboration oriented to the teaching-learning and research process. In addition, one of the regulatory principles of the network of universities formed through SUNEO is the promotion of social welfare in each region of Oaxaca where the universities were strategically built in one of the poorest states of the Mexican Republic [13]. Despite the fact that universities have been created in a social context where cultural identity is represented by "uses and customs" (a system which allows indigenous communities to continue their traditional forms of self-governance), and the ethnic groups that underlie these territories seek to preserve their community through their myths and cultural manifestations, SUNEO has known how to coexist and contribute to the transformation of the environment towards a better standard of living.

## Competencies and Teaching in Utm

In the sense proposed by Elliott (1993), competence is the ability to act intelligently, when he states that "competence in teaching lies in the ability of teachers to put educational values into practice in their transactions with students." In this sense, UTM teachers put their competencies to promote achievement, before their technological competencies, such as: leadership, decision-making, communication, and professional and ethical commitment [14]. The genesis of UTM occurred in a technological niche, that is, the training system was concentrated on careers in electronics and computer engineering, initially having a high cost in the recruitment and selection process of teachers with technological competencies, and the construction of the campus infrastructure. Throughout its 28 years of existence, profitability has been sought in all activities, including the social and economic impact for the region and the state of Oaxaca. It is an advantage for this higher educational project, to

have sown the seed for promotion and technological development. However, the natural emergence of digitalization and educational technology has overcome the power of competitive updating of teacher's skills in the area of Social and Economic-Administrative Sciences in the formation of technological and methodological competencies that are vital for the teaching and learning process in virtual spaces. The teacher training plan for the acquisition of technological competencies becomes a priority for teachers of economic-administrative sciences since mastery of technological competencies only occurs in 20% of its population of the total of teachers assigned in the area of Economic-Administrative Sciences at the university.

Several authors (Ferrari, 2012; Area, 2010, Cabero and Llorente, 2008 among others) have emphasized the importance of ICT in educational processes due to the benefits in teaching and learning. However, it is necessary for people to acquire the skills and knowledge in the use of ICT, to be digitally competent in various fields, and to participate successfully in a highly digitized society. Digital competences are strongly linked to the services and activities of the virtual space, as mentioned by Arias-Oliva & Yáñez-Luna (2013) when they state: "The process of creation, preparation, operation, and distribution of knowledge through methodologies of teaching and content distributed through the use of ICT collaboratively and/or individually to overcome structural limitations of time and space. We believe that the learning process should be considered in a comprehensive manner, where ICT is a frontier between the traditional "face-to-face" learning method and the emerging models of online e-Learning. The frontier is in distinguishing between learning with all ICT tools (tablets, LMS, mobiles, educational digital objects, etc.) and traditional technological methods (blackboard, master class, books, readings, etc.)". Competencies are present in every act of the students' lives, manifested through their successes and achievements.

Knowing the strengths and weaknesses of students is important because it allows planning for the development of their academic progress. Competencies are understood to be any attitude, behavior, motive, or other personal characteristics that are essential to assume a role, or more importantly, to improve performance and personal development. In the context of UTM, the competencies of the students are reflected through the essential behaviors that they develop in each semester with the promotion of their autonomous learning capacities, creativity, and entrepreneurial spirit. Due to the above, the institutional interest of UTM is that all students have the teaching of subjects in the economic-administrative area regardless of their field of study. In this research, first-year university students have been classified as digital natives belonging to Generation "Z", which would imply being technological experts with natural aptitudes in the use of technological tools. In recent research (Allende & Reyes, 2020) students have indicated that they did not receive any formal course or training that taught them to use technological tools, that is, their learning has been more intuitive in the use and application

of technological tools. Despite the absence of this formal training, 41.2% consider themselves very capable in the use of Internet messaging, 35.1% consider themselves very capable of browsing the Internet and interacting with search engines. However, they indicate that they are moderately adept at using online storage [15]. Only 27.5% of students consider themselves skilled at podcasting and video-casting. 28.2% of the students consider themselves not skilled at manipulating interactive presentations on the network or 32.1% consider themselves not skilled at using QR codes. 89% of students consider that they have no skill level when it comes to blogging or wikis.

## Conclusion

UTM is recognized in society for the quality of the teaching that is taught in person, which is why it enjoys prestige in higher-level education. Faced with the stay-at-home measures, caused by the COVID-19 pandemic declared on March 11, 2020, by the World Health Organization (WHO), UTM has implemented actions in the technological field to give continuity to the 2019-2020 school year. Pressured to complete the syllabus in a timely manner, teachers were forced to reinvent their teaching methodologies to give way to the process of virtual educational, under a scenario where the coronavirus had become a global threat to humanity, and that consequently social isolation was decreed, making it impossible to continue face-to-face education. Despite the accumulated experience in teaching, teachers have experienced confusion, anxiety, and fear due to the transition from face-to-face to virtual teaching. Due to the lack of access to physical spaces, the virtual learning environment constituted an institutional alternative to provide pedagogical continuity and guarantee the right to free public education offered by UTM. However, the activities implemented in the transition phase have made it possible to identify the following:

a)  It was identified that UTM did not have a robust technological platform that would allow teachers to transform their teaching activities, nor the support to give access to all users.

b)  The need to create a continuous teacher training program in educational technology was revealed.

c)  The multicultural factor that is generated in the university community was confirmed, due to the existence of students belonging to ethnolinguistic groups who live in communities considered to be highly marginalized, and therefore lack the technological infrastructure required for virtual education.

d)  The low quality of the communication networks available in the Mixtec Region was identified both for the university and for the teachers and students.

e)  It showed that the students were aware of the health crisis caused by COVID-19, so they intuitively made use of their strengths in terms of technological skills to convene and organize through social networks. It was confirmed that the use of Facebook and WhatsApp are the main free tools that students use on a daily basis, which keeps them interconnected and that they have been helpful in the communication and distance education process.

f)  After analysis and reflection of the pedagogical perspective, the following strategies were applied:

g)  Regarding the platform for the management of virtual learning, Google Suite for Education® has been used, because the set of tools offered have allowed for the continuation with the teaching-learning process through: videoconferences that guarantee a class of 60 minutes or more, applications for mobile devices for both Android and iOS operating systems allowing some students to access their classes through their mobile device, hold meetings with up to 250 participants, conduct virtual evaluations, among others.

h)  Training courses have been implemented for teachers in the management of virtual platforms.

i)  Due to the fact that SUNEO has different university campuses in the eight regions of the state, access to the computer rooms in the universities has been authorized, maintaining a healthy distance and the corresponding sanitation measures. This allows students with a lack of technological infrastructure and with limited resources to continue with their university studies.

j)  Time and space have been transformed into a context where the COVID-19 pandemic worsens and the so-called "return to educational normality" is perceived to be increasingly distant. Considering the diversity of economic, social, cultural, and technological factors coexisting in the same plane for education, the attitude taken by the teacher becomes relevant, since it generates conditions for the development of activities with the student in virtual spaces. Hence the importance of emotional competencies, which permit the regulation of intrapersonal relationships (each with himself), and are necessary to maintain an interpersonal relationship (teacher-student) suitable for the acquisition of cognitive competencies in a virtual educational space. Carrying out research in this regard is a task that concerns all the actors involved and a commitment to education in order to achieve the objectives of a quality educational proposal.

k)  Currently, educational technology is part of the toolkit of teachers and students, promoting a growing technological advance that strengthens the educational contexts. It is conceivable that educational technology platforms are "knowledge-producing units", given the corpus of stored data that generate relevant information. However, it is still necessary for the various actors involved in the teaching-learning process to acquire digital skills, in order to have the skills to find, obtain, process and communicate that information converted into knowledge.

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