Significance of the digital context in the new post-COVID university teaching role

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Abstract— The introduction of new technological tools in learning processes has configured a new teaching scenario in academic spaces at the university. The aim of this study was to reveal the significance of the digital context in the new university teaching role in post-COVID time. The research had a qualitative approach through the interpretive phenomenological method and the technique used was the semi-structured interview applied to professors in engineering programs from Peruvian universities. The methodological procedure was the organization of data through content analysis, emerging validated categories through triangulation process, reflecting the phenomenological reduction. The results showed five categories which were: accelerated evolution of the teaching function, technological impact on new teaching role, new learning scenarios, transition of educational paradigms and adaptable educational systems. So, it is concluded that educational systems are adaptable in the transition of educational paradigms where the professor showed the effectiveness of learning solutions with expeditious interventions and interactions to facilitate distance learning in a digital context where the pandemic has modified the new teaching role.

Index Terms—*Digital context, university teaching role, new learning scenarios,* **pedagogical adaptation, adaptable educational systems.**

I. INTRODUCTION

The post-pandemic time in which we are currently living, after the health crisis caused by COVID-1. It is accentuated by the insertion of more objective educational policies with greater emphasis on adaptation to the digital environment, innovations and newer methodological resources, which configures a system marked by the digital context, which originates a new role for the professor.

In educational field, the changes were significant throughout the world, as a result of problems and difficulties in developing virtual education, facts assumed by governments and universities [1]. This had significant consequences for professssors and students. So, it is necessary to implement more solid and effective educational policies to reduce existing gaps and give a new meaning to education [2].

In this context, last two years have witnessed an accelerated digitization process as part of the transformation of society. That is why, it is stated that every phenomenon and process that is related to society and digitization and the use of ICT [3]. The post-coronavirus has as its main characteristic the advent and presence of digitization, the use of digital devices, greater participation in distance education. So, living in a context of digital transformation is an objective fact due to the change in the way of understanding technology and the world. Thus, there is a greater understanding of the gaps between the domain of digital competence in the world of work to face the challenges of digitalized work [4].

This adaptation in the digital context also means transforming education, being an opportunity to rethink the education for future and the educational ecosystem. It is necessary to identify gaps in the educational field on the influence of ICT to reflect on the challenges, limitations and scope of the new trends and opportunities represented by the digital context in education [5].

In this special moment, where the technological impact plays an important role, a new role of the professor mediated by technological interventions enters the scene. The demand in the new role professor requires greater management of digital skills in the effective use of technologies; demonstrating digital competence is key in the new educational scenario [6]. Therefore, training in digital skills in professors must incorporate knowledge and practices on digital resources, professional commitment, more effective teaching - learning, better forms of evaluation and communication with students [7]. Professors are considered to be digitally competent when they develop digital competence, pedagogical competence and have personal characteristics such as being creative, open to change and using technology effectively [8].

The results of multiple studies on digital context in education should serve for leaders and specialists to understand the needs that professors have to develop their digital skills [9]. Likewise, the modification in the work system of the professor along with accelerated adaptation in the development of digital skills. It would have caused socio-emotional risks that affect the mental health if the professor, which also makes its study necessary [10].

Finally, the accelerated digital context where we live, the experience and pedagogical contributions of distance

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education during the health emergency, the emerging reality in functions and roles of the professor, as well as the development of skills and abilities with new educational models in students [11].

The aim of this study was to reveal the significance of the digital context in the new post-COVID university teaching role.

II. RESEARCH METHODOLOGY

A. Approach and Method

The research was developed from a qualitative research perspective through the interpretive phenomenological method. The phenomenological study describes the meaning of experiences lived by several individuals of a concept or a phenomenon. The main characteristic of the interpretive phenomenological study is to describe what all the participants have in common when they experience a phenomenon. The common phenomenon is the digital context that professors live in the new role in post-COVID time. Therefore, "what" the teachers experience and "how" they experienced it are described, which becomes the essence of the experience [12]. The technique used was the semi-structured interview applied to professors from engineering programs at a public university in southern Peru. The methodological procedure was the organization of data through content analysis, emerging validated categories through the triangulation process reflecting the phenomenological reduction.

B. Participants

The participants were 14 professors from the Faculty of Engineering from a Peruvian public university. This group of professors performs functions of teaching, research and university social responsibility. During the semi-structured interview process, the phenomenon of saturation occurred, leaving 5 key informants. The professors are two female and three male (Table 1), with more than 12 years of teaching experience, accredited academic degrees, aged between 35 and 50 years, who were identified with letters.

Table 1. Identification of key informants

Informant	Academic degree	Gender	Funtions
A	Master	Female	Teaching
B	Doctor	Male	Research
C	Doctor	Female	Teaching
D	Master	Male	Research
E	Doctor	Male	Teaching

C. Methodological procedure

In order to understand the common experiences or experiences shared by professors about the research phenomenon, the methodological procedure began with the identification of a phenomenon of interest for the study. Then, the researchers recognized and specified the philosophical assumptions of the fact of phenomenology. The data is

collected through the semi-structured interview of the professors who have experienced a new digital context, which gives rise to a new teaching role in post-COVID period. From the data obtained, the significant statements, phrases and quotes that provide an understanding of how the participants experienced the phenomenon are highlighted. Afterwards, groups of meanings or categories, networks, are developed, which is finally presented through an integrating network that contains the categories and subcategories. Finally, a description of essence of the phenomenon was made which is called structure, that is, concentrating individual experiences with a phenomenon to a description of the phenomenon [13].

Table 1. Emerged categorization on the significance in digital context in the new post-COVID university teaching role

Emergent Categories	units of meaning	rooting
Accelerated evolution of the teaching function	Teacher professional development	28
	Pedagogical adaptation	31
	Enriched professional practice	26
	Digital teaching experience	32
	Teacher socio-emotional welfare	13
Technological impact on new teaching role	Digital transformation	22
	Use of new digital technology	40
	Virtual interaction	20
	Distance learning programs	22
New learning scenarios	Digital learning environment	25
	Flexible and digital model	18
	Emerging pedagogical approaches	18
	Student centered learning	21
Transition of educational paradigms	Educational disruption	22
	Emerging educational models	19
	Connectivism – constructivism	8
Adaptable educational systems	Government educational policies	14
	Educational ecosystem	24
	Professor Training Programs	25

III. RESULTS

The interpretation of categories that emerged during the interview with the informant professors is presented in Figure 1. It shows the categories that comprehensively through the relationships that exist between the categories, identify the significance of the digital context and the new role of the professor in post-COVID period. There is evidence of a reality that requires further reflection and theorization to understand the educational phenomenon with the irruption of technologies that are transforming educational practices.

The categories which are part of the digital context and the new role of professor in post-COVID time are developed; which are: accelerated evolution of the teaching function, technological impact on new teaching role, new learning scenarios, transition of educational paradigms and adaptable educational systems.

A. Accelerated evolution of the teaching function

The use of information technologies and pedagogical adaptation in virtual environments in pandemic has transformed the role of the professor. In an increasingly digitized society, there is a remarkable evolution of the role played by the professor. Informant A pointed out: "*my*

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teaching work is not the same as it was two years ago, when the pandemic started; now I have many technological resources that support my teaching work; digital tools are at our disposal, thanks to them my pedagogical work is enriched*".*

The pedagogical adaptation in the virtual spaces that professor carries out is fundamental and traditional forms of face-to-face teaching are being abandoned. In this adaptation process, professors have to be creative and have the ability to use multiple technological resources favorably. There is a digital experience in the professor that deserves spaces for reflection. Informant B clarified: "*I feel that there is greater professional development. My pedagogical practice has been enriched with the use of active methodologies supported by digital resources; my classes are more interactive, and Dynamic. I cannot be the same professor as in 2019. The pandemic has required us to make a 180º turn in our way of teaching and understanding the educational phenomenon*".

However, one aspect that deserves to be highlighted is the socio-emotional well-being of the professor. Undoubtedly, the pandemic has left sequels on psycho-emotional side that need to be treated. Informant C stated: "*during the pandemic there was a lot of stress in my teaching work from learning to use new resources, from worrying that my classes would be more interactive. Psychological support is needed due to the emotional exhaustion suffered. Many professors have also suffered from illnesses due to exposure and long hours on the computer. Psycho-emotional help is needed due to the exhaustion suffered*". It is necessary to develop socio-emotional follow-up strategies and support for professors to guarantee their well-being.

B. Technological impact on the new teaching role

The use of technology by professor had a great impact and the digital transformation introduced in the educational field configures a new way of understanding education and the role of the professor. Informant B replied: "*I had to quickly learn to use new digital technology. The infinity of courses offered on the internet allowed me to prepare myself well. I was also a student in training courses and I realize the importance of using technology in my teaching work*".

Virtual interaction is another very important aspect. Informant E stated: "*Using virtual resources freed me from face-to-face administrative work. It has facilitated the professor-student relationship, and they have easy access to digital materials. I feel that there is greater communication with virtual resources*".
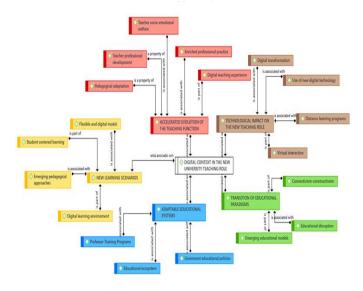
It is necessary to point out that the effective use of technology is a fundamental characteristic for the formation of suitable professors in a new teaching-learning space.

C. New learning scenarios

Considering that educational systems are adaptable, as well as the transition towards new educational paradigms. Reality is showing that there are new learning scenarios marked by virtuality. This new learning scenario without a doubt is characterized by virtuality and digitization.

It is important to highlight that the particularity of new learning scenario is the flexible and digital model. In this regard, informant D asserted: "*we cannot continue with rigid,*

Figure 1. Digital context categories in the new post-COVID university

traditional models with an education designed as before the pandemic. Now the scenario is different, we must dominate the digital environment, the technological tools; our students are also prepared and acquainted with digital tools."

International trends indicate that virtual spaces should be used as a new learning scenario. Distance education or hybrid education must be continued. Informant A opined: "*Physical classrooms are no longer the only learning spaces. In this return after the pandemic, we must continue to use virtual spaces; I think there are many more advantages and benefits than just face-to-face education*".

Therefore, in the new learning scenario, the environment is digital. Pedagogical approaches emerge in this new space, and specially learning is student-centered. Informant C revealed: "*now we have more ways of teaching using virtual tools, virtual digital platforms, web materials and content, asynchronous classes as a new way of learning, and simulations play an important role*".

Another characteristic that the new scenario presents is the importance of student-centered learning. Informant C pointed out: "*more than teaching traditional classes, more than using expository content, now we see the importance of the student as the center of learning, we must worry that the student really learns. Our approach is now more focused on the student than on content and on traditional way of*

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evaluating".

D. Transition of educational paradigms

There is a global consensus that higher education is undergoing a new educational paradigm as a result of the adaptations made by distance education during the pandemic. It is an opportune moment to make deep reflections and criticisms about the nature and functioning of the university, as well as the professional training system, the curriculum, teaching forms, and the use of resources and materials in order to propose more flexible and student-centered educational proposals.

It is a reality that the pandemic has shaken the foundations of countries that were not prepared to respond to an education outside the walls at university. It is necessary to incorporate new educational paradigms related to hybrid education, virtual environments, use of technological tools. Informant E declared that: "*the educational system is already outdated, constructivism, connectivism, training by competencies, training within the classroom must be rethought. We must propose a new professional training, considering hybrid education, virtual education, distance education*".

In times of educational disruption, change is a necessity in educational field and the incorporation of virtual spaces in learning is inevitable, with efficient use of ICT and adequate preparation of professors. Informant A stated: "*We have witnessed abrupt changes in education, there are new paradigms, new ways of teaching; the challenges are enormous. If we are not prepared to teach with these new educational approaches our teaching will be obsolete, our students will be harmed by not assuming new paradigms and educational models*".

In this period of transition of educational paradigms, the obligation to abandon traditional educational paradigms oriented to a much more human formation with concern for environment, the person as a social subject and the environment, is demanded.

E. Adaptable educational systems

Despite the enormous sequels and consequences left by pandemic. The crisis the crisis experienced has been an opportune moment for decision-making regarding the operation and organization of the educational systems in each country. Implementation actions have been developed in all countries with educational policies aimed at providing a response to continuity in the educational service, also ensuring the health and safety of all members of the educational community.

The results of the implementation of these educational policies in a scenario of urgency and health crisis, have shown that educational systems are adaptable. Informant B highlighted: "*in Peru, we were not prepared to continue with classes during the pandemic, but the government provided opportunities such as training, educational materials, learning platforms as well as guidelines to develop remote educational work with greater flexibility to adapt to this new form of education*".

Today, we are experiencing a post-pandemic moment and it is necessary to analyze the responses that educational systems have been developing in order to implement the positive and successful experiences of work carried out in universities. Informant C stated: "*there is a lot of positive experience, I think we have learned to get out of the crisis; the continuity of classes can be guaranteed despite the difficulties of carrying out our academic work in a virtual space that is little known to us*". It is essential to analyze and systematize the responses that the countries have developed according to the context in which each of them finds itself.

Furthermore, it is significant that the countries have allocated economic resources and budget items to guarantee sustainable educational proposals during and after the pandemic. Informant A stated: "*without economic resources allocated to the education sector to face the health crisis, it would not have been possible to support the continuity of the educational service; I think it is very important to continue granting more budget to the educational sector*". Informant E also declared: "*our educational system has been in a bad way for many years, dozens of years. We continue to drag models from medieval times; the government must initiate educational reforms that respond to current demands; but we must let the government work, demand it and ask it to do its work well, that should be our role as teachers and as citizens, thinking about what benefits society, especially young people who are the future of the country*".

Finally, it was learned that educational systems are adaptable and those responsible for education, ministries, specialists and politicians have understood that, within their possibilities, they have responded adequately in a delicate and urgent moment such as the one that has been experienced. However, it has been observed that in many countries there are problems shortcomings and difficulties in offering a quality service in education.

IV. DISCUSSION

The digital context is resignifying a new role of the professor. The technological impact and the accelerated evolution of the teaching function in an educational setting in post-pandemic time are determining factors in educational systems and in the transition towards new educational models. The overwhelming presence of technology and changes in educational structures must allow the search for creative solutions to successfully face the reality in which we live. The governments must undertake challenges in a future of uncertainty [14].

It is an opportunity to explore the results of educational policies applied in higher education in the countries during the confinement by COVID-19. The publication of research carried out after the pandemic shows a trend towards educational digitization [15]. On the other hand, at global level, it is required to rethink new educational models, relevant curricula, flexible educational systems, professional training according to the abilities, strengths and interests of the student that leads to training for citizens of the 21st century [16]. In addition, it is necessary to analyze the gaps that the lack of technology and the lack of knowledge of the management of virtual tools did not allow providing quality education during the health crisis [17].

Likewise, it is important to promote the development of

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digital skills in professors. The domain of digital competence is especially important in teaching. Global trends are committed to education in virtual spaces, outside the traditional classroom, where technological resources are used to the maximum to provide learning experiences based on the interests of the student. For this, it requires that professors have the competence to function in a digital context. After receiving training on virtual resources, the perception that professors have towards digitization has changed [18].

The new teaching role, use of active methodologies, more significant educational materials, authentic evaluation, professor-student relationship, among others, are aspects that mark the digital context in the new post-COVID university teaching role. From the interrelation of these elements, the education of the future will emerge, which is a reality in many universities.

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