New Information and Communication Technologies in Education in Times of Pandemic

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Abstract: New trends in computer tools accelerate people's cognitive processes; their use in daily life has significantly changed human needs, making the way of receiving information and assimilating communication processes more and more demanding. The new times sustain an inherent need to use computer tools for training and education in general, but it has been COVID-19 who has awakened with greater force the use of technology for human interaction, academia, business, and all professional branches in all its forms. In this work, the use of information and communication technologies in the university teaching process during the pandemic period was analyzed. A descriptive and bibliographic study was carried out. The analysis led to the conclusion that it is necessary to reinforce training in the use of new technologies, in order to take advantage of the resources to offer better academic alternatives

Nuevas tecnologías de la información y la comunicación en la educación durante tiempos de pandemia

Resumen: Las nuevas tendencias en herramientas informáticas aceleran los procesos cognitivos de las personas, su uso en la vida diaria ha cambiado notablemente las necesidades humanas, siendo cada vez más exigente la forma de recibir la información y asimilar los procesos de comunicación. Los nuevos tiempos sostienen una necesidad inherente de usar herramientas informáticas para la formación y la educación en general, pero ha sido el COVID-19 quien ha despertado con mayor fuerza el uso de la tecnología para la interacción humana, la academia, los negocios, y todas las ramas profesionales en todas sus formas. En este trabajo se analizó el uso de las tecnologías de la información y comunicación en el proceso de enseñanza universitaria durante el tiempo de pandemia. Se realizó un estudio descriptivo y bibliográfico. El análisis realizado condujo a la conclusión de que hace falta reforzar la formación en el uso de nuevas tecnologías, con el fin de aprovechar los recursos para ofrecer mejores alternativas académicas.

I.INTRODUCTION

The pandemic time has exposed many organizations and institutions, in all professional areas, and has shown the technological needs to face the new times. Modern society is in a process of transition, where technology is combined with the processes of communication and information exchange, breaking down spatial, temporal, cultural and social barriers. The need to implement the use of electronic devices is becoming more and more evident, not only in the field of communication, but also in other fields such as commerce, science, entertainment and education, which has become indispensable in daily life [1], [2].

The pandemic forced mankind to change their lifestyles, their way of seeing and dealing with things. Thus, it has become increasingly necessary to use IT tools in order to achieve professional goals faster and more effectively. This need has driven people to handle more and more technological equipment, technological applications and computer tools to support work needs.

The impact of ICT has become a key factor in many studies to understand how new technologies could be a catalyst and driver of changes in the processes themselves, and also an element to support change in organizational environments [4], [5]. This methodology is of vital importance for all higher education institutions, since it helps the teacher to make decisions in the teaching-learning process.

In this work, the use of information and communication technologies by teachers in university teaching during COVID-19 was analyzed and contrasted with that proposed by the authors in [1], in order to obtain a global vision of ICT in the formative process of students and teachers, and thus be able to focus on a useful scenario for curricular reforms according to the new societies.

The IT tools of some universities must be constantly updated in order to be in tune with the new professional requirements [6]-[8]. For [1] the needs were focused on virtual classrooms, educational applications, computer labs, digital whiteboards [9], however at present the technological needs are even greater, including interactive games, padlets, and a host of products that enrich academic training.

II.DEVELOPMENT

Some authors [5] have stated that technological education involves various scientific currents ranging from physics and engineering to pedagogy, without excluding communication theory. For their part, other authors [5] recognize that education can no longer be just an isolated profession, it must be accompanied by a set of complementary elements, and that computer tools are an inevitable necessity in the process of academic training [5], [6].

Information and communication technologies are the set of technologies that enable the acquisition, production, storage, processing, communication, recording and presentation of information in the form of image, voice and data. Technological tools include electronics as a base technology that supports the development of telecommunications, computer and audiovisual [1].

The COVID-19 pandemic has been an unexpected situation for the world, yet many academic institutions were prepared to take on new teaching models. But others lacked the infrastructure to support academic needs through technology. This diversity of situations has caused a general uncertainty about the results of training in basic education and university students.

Universities with strict regulatory bodies were better prepared to take on online education, but basic education institutions lacked the technological infrastructure to take on the challenges of academic virtuality. Moreover, basic education does not have the necessary preparation for online teaching methodologies. This deeply worsens the situation of young people in secondary education.

Education should complement the social formation of individuals, consequently, it should be added to the use of technological tools that involve interactivity, allowing communication between users, enabling them to be passive spectators to act as participants [12]. In addition, it facilitates interconnection, making it possible to instantly access many databases located at a great physical distance [10]. Interconnection allows many sites to be visited and facilitates real-time communication between people. Educational technology can also achieve instantaneity, allowing the reception of information in good technical conditions in a very reduced space and time almost instantaneously, being able to access distant populations or people who for different reasons prefer to receive classes without leaving home [2].

In remote times, education was focused on the professional training of the individual, but today education includes personal training and interaction with various technological, social, industrial and economic scenarios, so it is necessary to use more advanced tools that adapt to the concerns of the modern world.

At present, educational software is immersed in the same virtual classrooms, in phone applications, in the daily use

of things, hence education must reinvent itself to offer a different form of training, which allows a real interaction with the world but also offers the traditional theoretical foundations of the subjects, using modern teaching methods.

III. RESULTS

Until 2018 it was evident that teachers only focused their educational methods in the traditional way, and in the technological part they only concentrated on the use of personal computers and slide projectors [1], leaving aside all the complementary technological tools. At present, the teaching and technology activity involves a wide variety of resources (fig.1) that include industrial interaction with the current world, for the placement of students in real scenarios and with a view to projects within business contexts according to the profession of each one.

Fig.1 shows some applications that are currently used in a common online class, and it can be seen that classes are no longer limited to a slide but also include links to other portals that allow students to evaluate their professional projection over time.
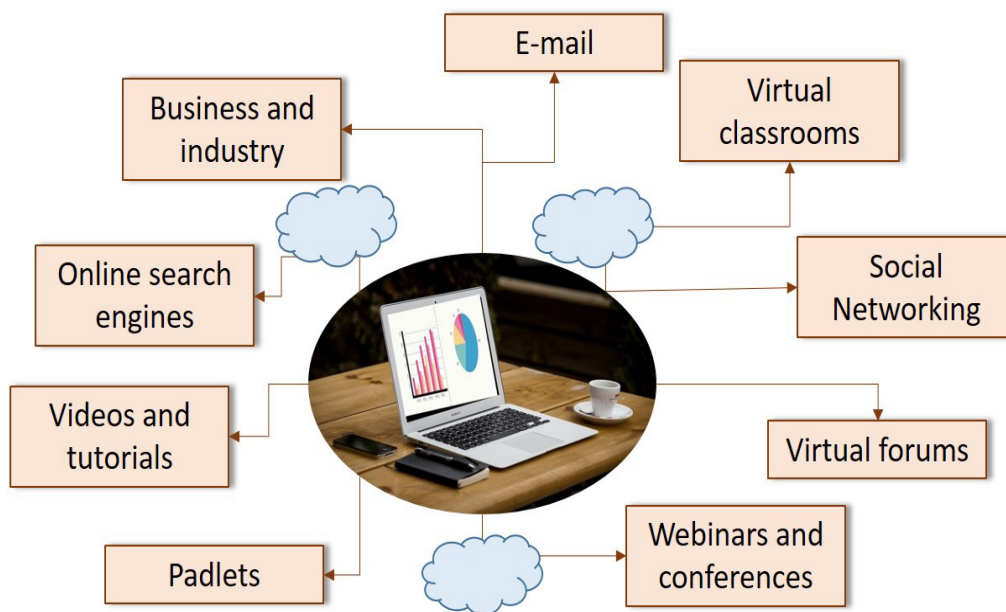

Fig.1. Computer tools used in the virtual classroom

Until a few years ago, school groups were face-to-face, but today, even before the pandemic, study groups are done with technological applications, and work in multidisciplinary teams is no longer attended in face-to-face discussions. These social changes drive education to transform itself in order to adapt to a changing society and a changing business and industrial system.

The new challenges for education, pandemic or no pandemic, will be to offer professional training that meets business demands, with practical but scientific knowledge, capable of creating adaptive, creative, dynamic, innovative and proactive professionals.

Figure 2 shows the challenges of the new education, with well-used technological tools, with a technical-scientific character and with a transcendent vision in the world of tomorrow.
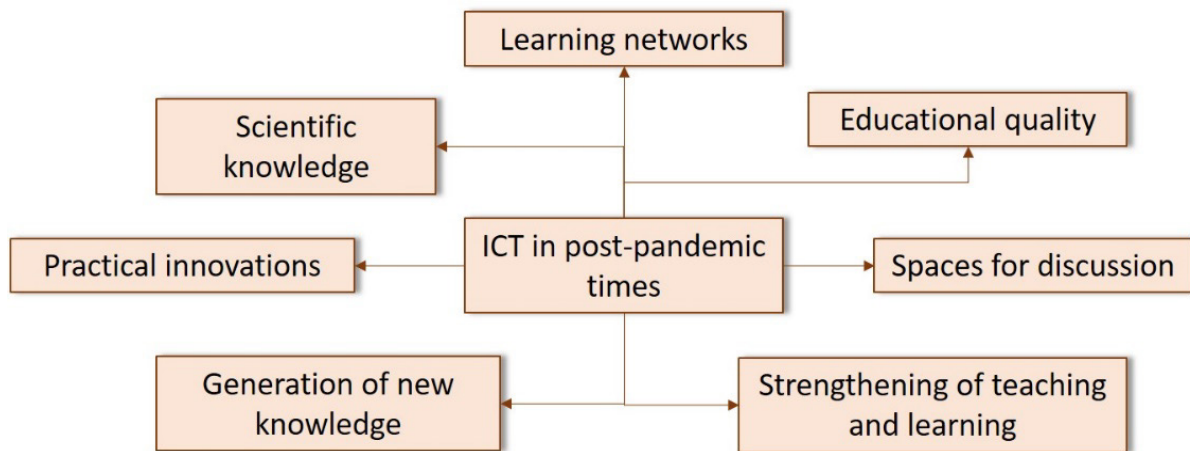
Fig. 2. New trends in education with the use of ICTs.

The time after the pandemic should be a moment of reflection for the reform of many social processes, among them the new vision of education, which will be strengthened by the use of ICTs and will also have a greater appreciation of face-to-face presence. With more open spaces for discussion, without so many limitations such as space, distance or traffic. It will also have the possibility of offering new online careers, with greater knowledge and mastery of resources, with a view to constant innovation for new digital businesses.

IV.CONCLUSIONS

After completing the following test, it is possible to draw the following conclusions:

1.Education must be redefined in order to respond to the new social paradigms and the new industrial demands. With a technological and scientific approach, which assumes the respective roles of the new society.

2.Technology must focus on industrial and scientific development, with a view to social, economic and political growth in accordance with the new ways of life.

3.Incorporating education with technology allows reformulating theories, methodologies and systems in favor of new professionals, with scientific and technical character, who are capable of assuming the challenges of modern times.

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