# UNDERSTANDING THE PROFESSIONAL DEVELOPMENT OF TEACHERS IN DIGITAL AGE

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**Abstract**

The present paper analyzes the importance of quality education and focuses on preparing teachers to delivery it. Today's society is characterized by its constant technological change. Today's students are increasingly aware of the world of technologies; That is why educators see the need to take advantage of this new source of intrinsic motivation using tools of this type and incorporate them in the development of activities that encourage students to take an active part in their learning processes. The use of these teaching mechanisms allows increasing the possibility of promoting new forms of learning oriented to the development of thinking strategies and interaction with other individuals while stimulating their level of personal activity. The use of technologies allows information to be acquired, processed, stored and disseminated, which contributes to the training of people so that they can adapt to new social challenges. In this sense, it is considered that educator training should be aimed at generating reflections on processes aimed at promoting the pedagogical use of tools, resources, programs, services and environments characterized by the use of technology. The 21st century teacher needs much more than a superficial or mechanical understanding of the fundamental ideas of a discipline. It must also penetrate the deep structures of knowledge and their relationships, as well as the methods of testing, evaluating and expanding them. They need pedagogical skills to make flexible use of knowledge, as this is how they can pay attention to the ideas that arise in the course of the learning process.

**Key words**: teacher's competences, digital skills, LKT tools

According to ISTE (2018), the main objective of the NET's standard is to establish guidelines for educators to design, implement, and evaluate educational experiences to engage students and improve learning, enrich professional practice, and provide positive models. by all actors in the educational context (ISTE, 2018).

In this sense, we will refer to main indicators of the teacher's professional development: 1) Facilitate and inspire student learning and creativity: the use of subject knowledge, teaching processes and technology is promoted to facilitate student learning, creativity and innovation in virtual environments; 2) Design and develop learning experiences and consultancies in the new digital era: the design, development and evaluation of learning experiences is established through the incorporation of contemporary tools and resources; 3) Model work and learning in the new digital age: teachers must exhibit knowledge, skills and work processes characteristic of an innovative professional in a global and digital society; 4) Promote and model citizenship and digital responsibility: an understanding of the resources of local and global societies is sought, as well as the responsibility of incorporating digital culture through ethical and legal behavior in their professional practices; 5) Participate in professional growth and leadership: the improvement of the professional practice of teachers is stimulated, through permanent growth and the exhibition of leadership and in the school and community to which they belong, promoting the effective use of the digital resources (ISTE, 2018).

The new era, which is a consequence of technological evolution in recent decades, has significantly influenced higher education, not only because it has improved administrative processes, but also because it has opened the doors to new forms of training and spaces for learning (Ertmer, *et al*, 2014; Bernard *et al*, 2014; Uceda *et al*, 2010). The foregoing results in the decentralization of knowledge (Niebles *et al*, 2016), because technology, due to its great influence, has changed our ways of doing daily activities, which, applied to a pedagogical environment, causes that technology is not only a means of training students, but also becomes a virtual environment for interdisciplinary interaction (Badilla, 2007).

This makes us invoke a balanced definition of ICT as follows: a set of techniques developed

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and applied to technological devices that bring together processing, storage and transmission functionalities (Luz, 2018). Similarly, in general it can be said that ICTs are developed mainly in technologies that have the quality of transmitting data anywhere and at any time, regardless of the period of time in which the electronic device was created (Cacheiro, 2018) . The integration of ICT in the educational environment, both basic and advanced, is a subject that is in constant debate due to the multiple points of view that exist on this subject, however, the efforts to integrate these technologies in educational environments have been important in relation to the objective that the student can use them in their academic training and in the critical exercise of their citizenship (Bustos and Román, 2016).

Developing digital competence in the education system requires a correct integration of the use of ICT in classrooms and that teachers have the necessary training for that competence. It is probably the latter the most important factor for the development of a digital culture in the classroom and the harmony of the educational system with the new "network society". The connectivity and equipment will reach all classrooms, but it will be more difficult if there is a sufficient generalized level of digital competence teacher that allows their generalized accreditation (not as something optional or reserved for those with hobbies and computing devices) and develop a plan of coherent training with a proposal of evaluable indicators that allow to reinforce one of the worst areas of teacher professionalization attended in initial training (INTEF, 2013). Acquiring digital competence, integrated into specific teaching competencies, it is rather a process of development that has to be carried out over time to be able to integrate adequately in the repertoire of actions of the teaching staff; a process that goes from the establishment and identification of the educational problem to be solved with the ICT support in its broadest sense, and that goes through other cognitive processes complexes in which they are identified, analyzed, organized, evaluated and critically selected, among other processes, the most technological systems relevant to solve the educational problem or pedagogical situation in a context and moment.

## MATERIAL AND METHOD

This paperwork focuses on theoretical research, investigating the conceptual features, and the empirical aims on professional development of teachers. Analyzing three models of integration ICT in educational process and acquiring digital competences based on presented models, will emphasize the best practices to apply on.

## RESULTS AND DISCUSSIONS

The most important models of preparing teachers establishes a series of standardized ICT competencies best known internationally by UNESCO. A model with a strictly organizational vision, which is taking into account both the didactic advantages and issues such as the inclusion of ICT in the curricula or in the professional training of teachers is presented in *figure 1*, and is based on the establishment of pedagogical practices that favor the significant construction of students' knowledge through the integration of ICT; in such a way that it gathers the necessary competences for the design, implementation and evaluation of these educational exercises.

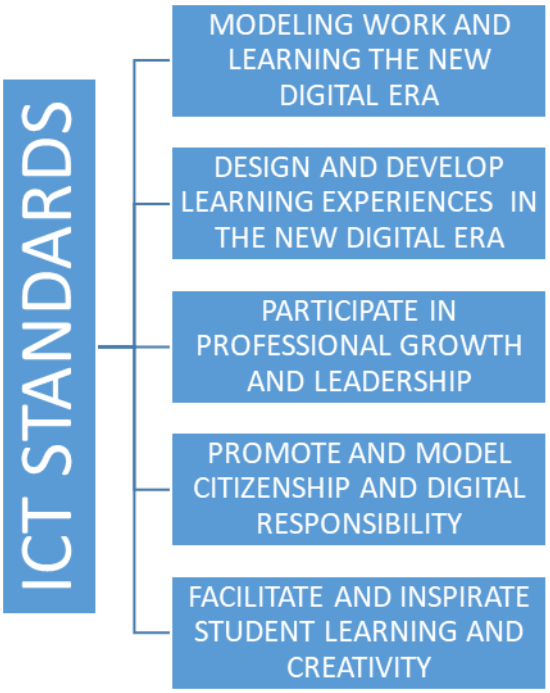


Figure 1 **Model of performance indicators for teachers in digital era**

As can be seen, the UNESCO model (*figure 2*) is based on the development of levels of ICT ownership which, in turn, are broken down into three elements in order to promote the good use of information technologies, which is sought is to get teachers to establish their level of competence according to the standards set, in order to establish training and professional growth plans in relation to the subject in question (UNESCO, 2018). On the other hand, in Europe, the Joint Research Center (JRC) of the European Commission (European Commission), proposes the European Framework

for Digital Competence of Teachers (DigCompEdu), which is based on related elements with the environment and professional commitment of educators, the importance of ICT in the teaching-learning process or return to self-taught students in the development of their digital competence as citizens.

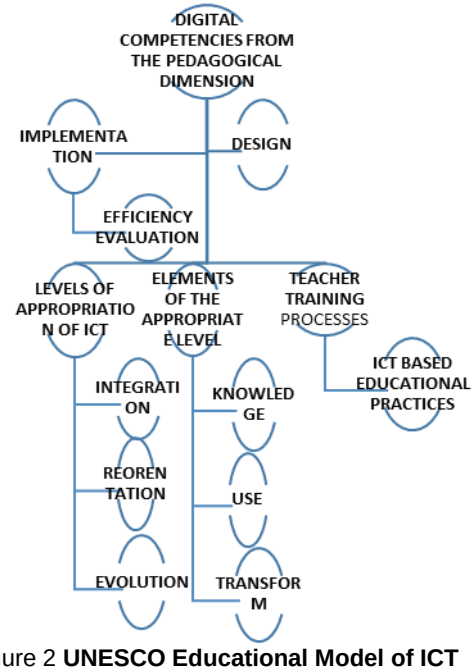


Figure 2 **UNESCO Educational Model of ICT**

As can be seen in *figure 3*, the model includes various types of skills related to its application, as well as: professional commitment, digital resources, digital pedagogy, evaluation and feedback, empowerment, and facilitating the digital student competence; in turn, these aspects can be developed according to the different levels of progression, such as: awareness, exploration, integration, mastery, leadership, and finally innovation. According to the proposed guidelines, the establishment of educational programs adaptable to the different learning environments is sought in order to achieve an adequate appropriation of technological resources (European Commission, 2018).

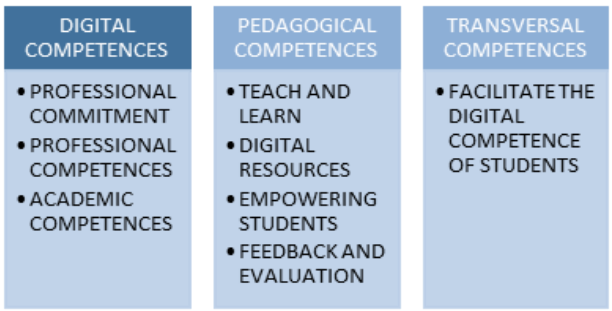


Figure 3 **Concept of evaluation digital competence in teachers** (Adapted from European Commission, 2018)

For the design of strategic educational plans of different countries or institutions, guidelines such as that of UNESCO (2011) have been taken as a basis. The ISTE model has been used in several investigations regarding the level of digital skills of active and training teachers.

Many of the teachers do not have the training to apply ICT tools and produce an innovative and enriching methodology for students. In view of this, the Learning and Knowledge Technologies (LKT) are focused more on formative than informative use, in order to learn more and better. That is to say, in the event that a teacher does not know how to implement an ICT tool, the LKT's come into action, which aim not only to learn how to use and control ICTs, but also to make the most of them for teaching, training and knowledge (Gil, 2017). That is, defined in a simpler way, LKT's are technology tools that help achieve objectives within the framework of educational programs, which have evolved from the already known ICT (Vivanco, 2015).

From the student's point of view, ICTs should be useful tools for motivating and stimulating the learning process (Njoku, 2015), contributing to the process of integration with reality, and allowing to observe the results of this interaction, the development of critical and creative thinking skills, as well as increased skills for information retention, meaningful learning and the development of useful skills in their performance in society.

There is a high self-perception in teachers regarding the application of the evaluated digital skills, however, in a minority in some of them it was observed that they are sometimes or even almost never or never applied; the one that showed the greatest flaw was the design of activities with ICT. This highlights the relevance of actively reflecting on the causes for which the use of ICT is being limited in teaching processes from the perspective of digital skills.

But some of leadership actions could improve the integration and use of ICT such as: taking strategic resource decisions; planning, coordinating and evaluating teaching and the curriculum; promoting and participating in teacher learning and development; and ensuring an orderly and supportive environment (Robinson, 2008).

Overall, the closer educational leaders get to the core business of teaching and learning, the more likely they are to have a positive impact on students' outcomes.

Digital competences associated with the use of ICT to increase professional productivity, the promotion of its ethical, legal and safe use and the training and information revealed that, in all cases,

teachers have applied them at least once, which makes it clear that they are taken into account at all times in the teaching processes (Instefjord, 2017).

Based on the literature review, it is pertinent to initiate reflection processes on the current development that teachers have in the field of digital competences, and it is necessary to highlight that the accompaniment in the training of ICT, supported by LKT tools, should be a joint commitment, between the teacher and the institution, that facilitates the implementation of these tools and trains students in digital citizenship issues. Likewise, it is recommended that within the curricular programs at the university level training in digital competencies be taken into account, beyond an instrumental vision of application, in such a way that it achieves a significant impact on the productivity and professional practice of the teacher.

## CONCLUSIONS

After reviewing the literature and based on the models, some conclusive ideas can be drawn:
a) It is relevant to use proven and recognized models for the management of teaching digital competencies, given that this cannot be random;
b) Training in this area must be articulated with educational policies issued by the State and higher education institutions;
c) There are difficulties in the ethical, legal and safe use of ICT in training spaces, therefore, training in this area must be notably strengthened;
d) Teachers require significant support in the management of information and the design of activities with ICT since, in some cases, they do not have the necessary elements to carry out these processes in a fluid manner.

The ICT boom has not only created new conditions for the emergence of knowledge societies, but rather new scenarios of social, political, educational, economic, cultural, educational performance, etc.
With that, the contexts where trainers carry out their professional activity and where their students will have to perform personally and professionally, they have also been deeply transformed, formative performance scenarios where new scenarios and digital teaching skills:
Towards the professionalization of teachers with ICT socio-cultural practices make up both the teaching staff and the students, interacting and building knowledge, giving rise to new possibilities and modalities for training, without distinction of time or space.

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