The Training of Educators within the Framework of the Pedagogical Challenges of the 21st Century

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corresponding Author: **Claudia E. S. Bautista** Doctoral student in Educational Sciences, Master degree holder in Information Technology, Specialist in Informatics for Teaching, Bachelor's degree holder in Educational Computing.	The training of teachers has been conceived as a responsibility that has a social impact that merits the development of research proposals that contribute to the discussion of the same. Thus, this article is the starting point for a doctoral thesis oriented towards the analysis of the disciplinary, pedagogical and didactic components of the training of educators in the area of Technology and Computer Science of the Universidad Pedagógica y Tecnológica de Colombia. This paper presents an analysis of the training of educators in the context of the technological challenges of the 21st century. The methodology used in this research is that of a case study, within the framework of the hermeneutic/interpretative paradigm. It is concluded that the processes of training educators must be progressively transformed, in harmony with social, economic and cultural conditions, while adhering to educational policies; without ignoring that there are political priorities that sometimes disregard the realities of these contexts

INTRODUCTION

The development of this article forms part of a doctoral thesis research project oriented towards identifying how disciplinary, pedagogical and didactic components have been integrated in the training of educators in the area of Technology and Computer Science of a Colombian university during the period 1994- 2015. The paper presents an analysis of the training of educators in the context of the technological challenges of the 21st century. It is structured in four parts and begins with a theoretical revision of the concept of training from the perspective of different authors and with some experiences associated with training processes. In the second section, the training associated with the emergence of new generations in the 21st century is developed.

Also, some changes in the behaviour of younger people, as a result of their interaction with new technological innovations, are highlighted. Then, a normative framework for the incorporation of technologies in the training processes is presented.

Finally, we offer a reflective discussion that puts forward some perspectives and studies which convey a similar intention. This paper constitutes a first reflection on, and analysis of, the technological, pedagogical and cultural challenges posed by the 21st century in the field of educator training.

THEORICALPERSPECTIVE
TRAINING

The concept of training has been the focus of discussion among great intellectuals, among them Gadamer, who thought it to be the greatest consideration of the eighteenth century and relates it to the concept of culture, taking into account the translation of the German term "*Bildung*" (which can be translated as cultivation or education/training, among others). This term means the culture that the individual possesses as a result of their education in the contents of the tradition of their surroundings. For Gadamer, "training becomes something very closely linked to the concept of culture and designates, first of all, the specifically human way of shaping the natural dispositions and capacities of man." (Gadamer 1993, p.14). On the other hand, for Gadamer, training is not a fixed goal, but rather a constant purpose that is fed daily from the environment in which it inhabits, for this reason the task of the teacher should be aimed at developing the potential of the student progressively.

From another perspective, training is conceived as the development of curiosity and exploration that raises questions and the desire to investigate the unknown. Accor0ding to Dewey, the training of thought is indirect. The teacher can propose a series of special exercises for the direct training of thought, but when conditions are unfavourable, the teacher's intention and exercises are useless. The training of thought can only be achieved through the regulation of the causes that evoke and guide it. (Dewey, 1989).

For his part, Hegel points out that man needs training, which consists of the responsibility that everyone has of shaping themselves. Hegel focuses on education as the human essence and considers that from it the being becomes a spiritual being. Hegel names it as an ascent to universality and has defined two forms of training whose relationship is complementary, which are practical training and theoretical training. In conclusion, Hegel states that the ascent to universality occurs as much from practical, as theoretical training.

It is thus that Hegel, quoted in Gadamer(1993), states that training is:

> Is keeping oneself open to what is other – to other, more universal points of view. It embraces a sense of proportion and distance in relation to itself, and hence consists in rising above itself to universality. To distance oneself from oneself and from one's private purposes means to look at these in the way the others see them. The universality is by no means a universality of the concept or understanding. This is not a case of a particular being determined by a universal, nothing is proved conclusively. The universal viewpoints to which the cultivated man [sic] (*gelbildet*) keeps himself open are not a fixed applicable yardstick, but are present to him only as the viewpoints of possible others. Op. cit., p. 46

For Humboldt, cited in Tennenbaum (2012), training, beyond being culture and the mere transmission of knowledge or the development of skills and abilities, should lead to the integral formation of the personality. He recovers the importance of a more humanistic than rational formation, focused more on feeling and imagination than on thinking. Humboldt defined

training as the "general interaction between theoretical understanding and practical will."

Today's students are changing radically, from their axiology to their epistemology, and they are not the subjects for which the educational system was designed over centuries, which wanted to have them as a native population (Piscitelli, 2009). Piaget said that the insufficient training of teachers causes them to be educated through programmed education, leaving aside the problems of the context.

Rousseau(1762) has shown that nothing is learned except through an active conquest and that the student must reinvent science rather than repeating it through verbal formulas. "To make a man reasonable is the coping stone of a good education, and yet you profess to train a child through his reason! You begin at the wrong end; you want to make the end the means. If children understood reason, they would not need an education…"(p. 87).

For Pestalozzi (1827), education must be conceived as the opportunity to cultivate the faculties that nature has bestowed on the subject, this practice is commonly confused with the development of purely rote and functional thinking. To educate is not to implant a multitude of exercises disconnected from the real world and without a unitary criterion, whichdisregard the context of the learner. The aim of education should not be based on the mere development of scholastic knowledge, but rather on the development of knowledge for life, which allows autonomous action, but without ignoring the individual differences of each learner.

Ken Robinson, quoted in the document, *Competencias TIC para el desarrollo profesional docente* (ICT Skills for Professional Teacher Development) (2013) of the Ministry for Education (MEN, by its acronym in Spanish), speaks about the challenge of bringing innovation and technology to scale, transforming education

into a process that addresses the challenges of the 21st century: the culture of creativity. In his recommendations to the British government, he emphasized the responsibility of the teaching authorities to cultivate a culture that improves the quality of the learning of the students, facilitating the creative participation of each member of the educational community. Robinson argues that it is possible to personalize education and address the interests, skills and learning styles of all people through the creative use of new technologies.

In conclusion, the theme of teacher training continues to be of great importance and is linked to the use of quality and creativestrategies that lead to the innovative transformation of the reality. At the conference "Priorities in teacher education: the 7 key elements of pre-service preparation.", it is argued that the quality of education depends directly on the quality of teachers, educators and the curricula (Kosnik, 2014).

THE TEACHER

The concept of a teacher that comes from Vigotsky is accepted to be a mediator between the social culture and the student, providing knowledge and culture through their experiences, in that sense, the student builds his knowledge in harmony with the society. Under the same idea are adopted some approaches of Piaget, where the teacher is considered a facilitator of new information, enabling the student to construct his own knowledge.

It is important to mention Davini (1995), who argues that the teacher should seek their continuous professional growth, for good performance in their educational work, highlighting that the better the education of the teacher, the greater will be the benefits for their students in the process of educational and cognitive development.

Freire (1992) considers that the teacher should not leave aside what the students bring with them oftheir understanding of the world; their way of speaking, their way of counting, calculating, etc., that is to say, their previous knowledge about their world. Instead, from all this a construction must be made within the framework of their reality. This will allow for the student's cognitive development based on the needs of their context.

For Dewey (1989) one bad practice of a teacher is to focus the student's attention on purely academic progress, ignoring the training in habits, attitudes, and behaviours. Often the ignorance of general conditions in the framework of a learning process affects the development of mental habits. The teacher becomes the gateway for analien mind to the understanding of a topic. In this sense, the youth relates the personality of the teacher to the subject they are learning.

On the other hand, at the normative level, in this country, through Article 104 of Law 115 of February 8, 1994, the person in charge of training is called the*educator*, defined as: "the advisorin educational institutions, of a process of training, teaching and learning of the students, in accordance with the social, cultural, ethical and moral expectations of the family and society" (Congress of the Republic of Colombia, 1994, p.14).

Likewise, in this same Law, Chapter 2, Article 109, it states that the training of educators will have as its general objectives: to train an educator of the highest scientific and ethical quality, to develop pedagogical theory and practice as a fundamental part of the knowledge of the educator, to strengthen research in the field of education and specific knowledge, and to prepare educators at undergraduate and post-graduate levels for the different levels and forms of the delivery of the educational service.

RESEARCH EXPERIENCES BASED ON TRAINING PROCESSES

At national and international levels, different studies have been developed around the training processes.

INTERNATIONAL PANORAMA

During the review,the study *La formación del profesorado en el uso educativo de las TIC* (Teacher training in the educational use of ICT) was found, in which JuanaMaría Sancho Gil, Adriana Ornellas, Joan Anton Sánchez, Cristina Alonso and Alejandra Boscoeste, pose a reflection regarding technology, characterizing, in a brief way, a positivist discourse around digital technologies that have not only failed to meet expectations, but focusing on their immense possibilities, they have consistently neglected the rest of the components of the educational system. This study focuses on initial and ongoing teacher training, which is a fundamental factor in transforming educational practice, with the support of ICTs. The analysis of the policy and practice to promote the use of ICTs carried out in Catalonia (Spain) over the last 20 years, account for the shortcomings in initial and ongoing teacher training, not only to respond tothe educational needs of the current society, but also to achieve the objectives of the Educational Informatics Programme(Juana, Anton, Sancho, Ornellas, & Sánchez, 2008).

It is pertinent to mention Fernández (2006), who developed the study *Competencias professionals del docente en la sociedad del siglo XXI (*Professional competencies of the teacher in the society of the 21st century), which offers a study of new teaching competencies and how their professional development is subject to the influence of the information and communication society. It also calls for the training of educational professionals in the mastery and didactic use of new technologies in order to recognize that their contribution can lead to the improvement of

teaching and learning processes in tune with the changes that emerge in society and in the individual.

The study of Spengler, Egidi, & Craveri (2007) called *El nuevo papel del docente Universitario: el profesor colectivo* (The new role of the university professor: the collective professor), points out the social changes that bring new challenges to teaching, reconfiguring the role of the university professor and demanding both pedagogical and technological innovations as well as a myriad of duties, some of which they were not prepared for in their classical training. From this situation arises, on the one hand, the necessary and immediate revision, updating and improvement of their teaching methods, and on the other, it is essential that their work be complemented with that of other pedagogical agents, allowing the realization of all functions, pedagogical as well as technical, such as in the case of the development of curricular computer material.

For their part Chehaybar and Kuri(2007), in their research entitled *Reflexiones sobre el papel del docente en la calidad educativa* (Reflections on the role of teachers in the quality of education), they raise a set of reflections around the current situation of higher education in terms of quality, considering for these indicators such as: equity, relevance and effectiveness. It is analysed how from the classrooms the teacher can contribute to this arduous task with a new, more active and transforming role, which implies substantial changes in both their training and their professional practice. It is hoped that the reflections raised will contribute to broadening the debate around the importance of the role of the teacher in the achievement of educational quality.

In Bolivia, they carried out the study *Formación de maestros en Bolivia: dos visiones y nuevas perspectivas* (Training of teachers in Bolivia: two visions and new perspectives), the objective of

which was to analyse the latest educational reforms of Bolivia, through which different curricular concepts were adopted and pedagogical knowledge was deployed with the force of practical knowledge and they gave differentiated importance to disciplinary and research knowledge. This study recognizes the importance of the teaching practice as the axis of the learning process. The current reform focuses on the symmetrical and horizontal relations between the country's own cultures and western culture. The emergence of diversity in Bolivia relies on the diversity of knowledge or science and the diversity of ways of making knowledge. It is an innovative formative perspective in the present Superior Schools of Teacher Training.(Cabello, 2015)

In Spain, they carried out a study called *Competencias para el uso de TIC de los futuros maestros* (Competencies for the use of ICTs for future teachers), which analyses the competencies of ICT use of teachers in training in the Universidad de Murcia. This analysis not only allows their evaluation as students, professionals and teachers who use ICTs, but it also allows us to have an idea about whether or not going through a university institution is a guarantee of having a minimum knowledge in this area,which will be useful when they incorporate themselves as professionals, teachers and learners of the new techno-social environment.(Prendes & Castañeda, 2010)

The document *Las tecnologías de la información y la comunicación en la formación docente* (Information and communication technologies in teacher training), collects contributions from the UNESCO World Report on Education, *Teachers and teaching in a changing world*, and describes the profound impact of ICTson conventional methods of teaching and learning, as well as the transformation of the teaching and learning process and the way in which teachers and

students access knowledge and information (UNESCO, 2004).

Also, the study called*La formación de formadores. Apuntes para una propuesta de plan de formación* (The training of educators.Notes for a proposal for a training plan) was found, developed at the Universidad Autónoma de Barcelona, which presents a training plan for educators in the non-formal arena. It is based on the professional profile of this agent of training, while taking into account, as a theoretical reference, the contextual critical model of the training of educators. In the concretion of the plan, it refers to the recipients, it formulates the general objectives and a whole set of contents organized into modules from the macro-didactic to the micro-didactic. The blended learning format is one of its basic characteristics, as well as the varied methodological strategies and resources, integrating in all this the new information and communication technologies.

NATIONAL PANORAMA

At the national level, the following works related to teacher training are mentioned.

The research work called *Estudios sociales sobre el Maestro Colombiano* (Social studies on the Colombian teacher) bySandoval(1980), recounts the history of teacher training in Colombia, showingthat trajectory of the teacher from a preferential perspective. "It is the story of a group of individuals, in the process of being constituted as a collective, who have sought to reaffirm their knowledge in relation to the social function of education. Throughout the history of education in Colombia, it is common to find that attempts at teacher professionalization have been linked to the political and educational projects of the ruling class, reflected in reforms that emphasize either their role as the promoters of liberalizing values, or their commitment to traditional values and the maintenance of social order."

De Zubiría (2013), who conducted a research study called *El maestro y los desafíos a la educación en el siglo XXI* (The teacher and the challenges to education in the twenty-first century), expresses concern about the lack of balance between the elements that form part of the education system of the twenty-first century, each part attending to different intentions according to the period in which they arise, that is to say, the native students are born and live between the technologies and the demands of the more developed world, the teachers, for their part, were educated with other methodologies and tools and their dynamic is different to the dynamic demanded by the student. Likewise, Zubiría, in this work, argues that "the world requires flexibility and creativity to adapt to a profoundly changing life, and the school assumes fixed curricula,outlined centuries ago. Some young people who will live in the 21st century are taught by teachers of the twentieth century, but with pedagogical models and curricula from the nineteenth century." The author discusses eight possible challenges for schools in the first decades of the century and which have been attempted to be answered during the last two decades at the Instituto Alberto Merani in Bogotá (Colombia), from the perspective of dialogic pedagogy: to privilege development over learning; to approach the human being in its complexity (diversity and unity); to prioritize the work in basic competencies; to develop greater diversity and curricular flexibility in basic and secondary education; to form more autonomous individuals; to favour the interest in learning; to favour solidarity and individual differentiation; and finally to develop intra and interpersonal intelligence.

El perfil del Educador para el siglo XXI (The profile of the educator for the 21st century), is another work developed by Buritacá (1995).The author makes an analysis of history and affirms that there must be a reconstruction of society in

order to provide another social and configurative vison. In this sense, he affirms that the family is one of the main elements that contributes to the formation of the human being, and that the family is the basis for generating principles and values, and it is here that the reconfiguration must begin and then move on to the traininginthe school, since it is a context where the young person initiates the process of the adaptation or acceptance of their personality. It is at this stage that the teacher does his best work in creativity, dialogue, and the recovery of values, and this transformation is evinced, depending on their skills and training.

La profesionalización docente en Colombia (Teaching professionalization in Colombia), developed by Macia(2009), is another of the works found that portrays the Colombian normative framework during the last decade, which regulates the access and exercise of teaching in the state sector and establishes changes in the training requirements of teachers, which has allowed people of diverse professional backgrounds, includingnormal school teachers and bachelor degree graduates, to practice teaching. Within this new framework, the entrance to the teaching profession, as well as promotion within it, depends on a series of evaluations of knowledge and performance that give rise to a context of competition among the different professionals. From the perspective of sociology, it is sought to analyse the social and occupational implications of the New Statute of Teaching Professionalization (Decree 1278 of 2002) in the state teaching body, based on its analytical comparison with the previous statute (Decree 2277 of 1979). To this end, the category of teacher professionalization was developed.

We also found the study *Impacto de la Formación Académica del Docente en el Desempeño de la Educación Superior en Colombia en el periodo 2007 – 2012*(Impact of academic teacher training on the performance of higher education in Colombia in the period 2007 – 2012) whose objective was to analyse the impact of the academic training of university teachers on the educational performance of students in higher education in Colombia in the period 2007-2012, calculated through the *Saber Pro* test (national standardised exam). After performing a statistical analysis through the ideal regression model, it was concluded that the level of education of the teacher generates a positive impact on the performance of university students in the tests, and that the type of contract with which teachers are employed increases the test result. That is to say, the higher the salary, the better the teaching performance and, consequently, the academic performance of the students.

It can be observed that there are different experiences around the training of teachers that serve as important inputs in order to understand the context of the research that is put forward. There is considerable concern about the way in which training processes are being developed worldwide.

Another work is called *La formación de los docentes en Colombia. Estudio Diagnóstico* (The training of teachers in Colombia. A diagnostic study), which presents the training processes of teachers in Colombia, both those who are in charge of basic education, as well as secondary and higher. The work shows the trajectory of the teacher as the history of the constitution of a social subject within the framework of the determinations of educational policy. In the same way, it analyses the decrees that within the accreditation processes led to the restructuring of both the Normal Schools and the Bachelor's and Specialization programs in education. At another point in the study, attention is paid to the training of teachers in Colombia, in the modalities foreseen by the National Education Legislation, namely the Normalschools and the Faculties of

Education. As a case study, the way in which the *Universidad Pedagógica Nacional*operates is given in detail, due to its nature as a university institution dedicated exclusively to the training of teachers. Finally, some trends are pointed out that seek to innovate teacher training in Colombia, at the bachelor degree level, emphasizing the reflection on practice, the role of pedagogical exercise and the enriched spaces. The text ends with some conclusions and recommendations for future research (Calvo, 2004).

Another study is the one developed by Osorio called *Una experiencia de formación en Ciencia, tecnología y Sociedad para maestros de educación básica y media*(A training experience in science, technology and society for teachers of basic and secondary education), which refers to a continuing education program in science, technology and society developed at the Universidad del Valle, for teachers of schools and colleges of basic education in the municipality of Santiago de Cali, aimed at elucidating the epistemological and sociological foundations of science and technology, with aspects related to the social organization of science and technology in Colombia. In addition to this objective, the project articulates a transversal line of classroom projects in the fields of science, technology and environmental education (Osorio, n.d.).

The work *La formación de educadores en Colombia*(The training of educators in Colombia) was found, where an analysis is made of the amount of demands that the training programs must fulfil. Teachers are delegated responsibilities ranging from the personal to the social, family, political, pedagogical and ethical aspects, and of pedagogical and teaching performance. The study also analyses how the educator has the responsibility of contributing to overcoming the crisis of the country, considered to be a reflection of the quality of the teaching imparted. Thus, it is questioned, what type of formation educator

training programs should offer and what their purpose is. This work also recounts, from the normative tradition in the history of Colombian education, the training of educators, from the creation of the so-called Normal, Rural and Higher Schools, and from the beginning of the Faculties of Education. It is concluded that the training of educators not only needs the pressure and/or external coercion of legislative rules, it also requires a high degree of awareness of the society and of the educators themselves about the nature of their profession and their performance,as well as a solid pedagogical basis and of the recognition of pedagogy as a science and notmerely as a technological instrument.

METHOD

The method used for this research is that of a case study, which seeks to construct theories about social and organizational phenomena of complex causality. According to Yin (1994), a case study is "an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." In the same way, this study is developed under the hermeneutic/interpretative paradigm, which seeks to increase knowledge through the reading of reality and the understanding of the complexity of social problems. This approach is qualitative and, according to Hernández, et al., (2003 P.6), it is that "which uses data collection without numeric mediation to discover or refine research questions and may or may not prove the veracity of the hypothesis during its interpretation process."

RESULTS
TRAINING AND EMERGING GENERATIONS
The training of teachers is an immense responsibility, with new generations that are arriving to the school classroom and who are but the response to the rapid propagation of technology in recent years, which has triggered a

series of changes that have an impact in the conduct of young people, allowing them to maximize their skills with the use of technologies and to implement new ways of communicating. Piscitelli (2009) considers that "today's students are changing radically, from their axiology to their epistemology, and they are not the subjects for which the educational system was designed over centuries, which wanted to have them as a native population (Piscitelli, 2009). From that same perspective, Vilches (2001) thinks that the emergence of new technologies has caused a series of migrations that affect different spheres: language, the cultural market, new narrative trends and the conduct of users, which, thanks to interactivity, turn into "content handlers."

This profile of the new subject demands a look at their current ways of communicating and learning, taking into account that they are users who are born in a digital village, surrounded by technologies and with innate skills for handling them. Prensky (2001) recognizes multitasking abilities in these students, where speed is a determining factor for their operational performance. The term *digital native* has undoubtedly generated a bibliographic revolution which intends to describe the native subject versus the digital immigrant, to which the author refers. Thus, teacher training programs have a social responsibility that must respond to the challenges posed by globalization. For this reason, the elements that constitute the training given must be analyzed, in order to identify the coherence with the current context and educational policies. As Dewey (1899) used to say "the most difficult thing to achieve is the relation between the school and society." Nowadays, the educational system asks for creative solutions that transcend the transmission of concepts to the promulgation of an innovative didactic. So much so that, education must recover its meaning through its reconfiguration and with the objective of

recognizing a transformative action in teacher training.

It is important to mention that, in this century, a new culture of participation is spoken of, where the so-called digital natives (Prensky, 2001) are the protagonists within the society of information. They are defined as subjects that are born in the digital era with a consummate ability in the use of information and communication technologies, and where their main characteristic is, without doubt, *technophilia*. For this reason, it is important to analyze if the training of teachers responds to the characteristics of the new generations, which emerge in the society of information, given that the information and communication technologies have been transforming the classroom ecology. Piaget said: "society expects more of its new generations than mere imitation: it expects enrichment."

This analysis allows us to state that, among the characteristics of educators of any area, there is a disciplinary, pedagogical and didactic knowledge of the contents, which is necessary for teaching and professional development. As from the 1980s, many studies have been carried out which have focused on researching about the use and appropriation of technology by teachers for the development of their practice and profession. For that reason, teacher training programs must constantly assess the articulation of the disciplinary, pedagogical and didactic knowledge that has been part of their training. In this space, theoretical reflection will become a practice that will lead to new reflections that allow for the creation of constructs of professional practice. It is from reflection that professional knowledge is gradually built, mediated by the research of its practice, which re-evaluates the elements that an educator should meet, who nowadays faces a reality that, without doubt, is a reality impacted by technology.

NORMATIVE FRAMEWORK FOR THE INCORPORATION OF TECHNOLOGIES IN TRAINING PROCESSES

It is important to highlight that organizations, such as UNESCO[1], OAS[2] and the UN[3] have been concerned with the research of phenomena which occur around the society of information, making a world-wide presentation of different documents where they outline the integration of ICTs[4], based on the need for real contexts and the favorable impact they have had on education

On an international level, in 2008, UNESCO published the document ICT Competency Framework for Teachers, which has its basis in three approaches: technology literacy, knowledge deepening and knowledge creation, and defines the performance indicators of educators of the 21st century, where it maintains that "schools are transformed into learning organizations in which all its members are involved in learning. Teachers can then be seen as model learners and knowledge producers who are constantly engaged in educational experimentation and innovation in collaboration with their colleagues and outside experts to produce new knowledge about learning and teaching practice. A variety of networked devices, digital resources, and electronic environments are used to create and support this community in its production of knowledge and anytime, anywhere collaborative learning."

At the same time, the United Nations (UN) and its global alliance in technologies for development have sought to work in conjunction with international entities in order to expand the use of technologies to fight against poverty, in an attempt to integrate ICTs into national policies so as to achieve the Millennium Development Goals (MDGs). Thus, the UN and the International Telecommunication Union (ITU), in the World Summit on the Information Society (WSIS), have defined among their lines of action the integration of ICTs and have stated that: "all people, organizations and communities should have access to knowledge and information." At the same time, they consider that ICTs can contribute to universal teaching, through the training of teachers, by improving their professional aptitudes, and they suggest that the information society must be based on values that are universally accepted, promote the common good and prevent the abusive use of ICTs.

From another perspective, the document Strategic approaches on the use of ICTS in education in Latin America 2013 acknowledges that "A vast presence of ICT's constitute a chance and a challenge, imposing the pressing task of finding an orientation and use that enables achieving more democratic and inclusive societies, strengthening collaboration, creativity and fairer distribution of scientific knowledge, as well as a contribution to universal access of good quality and equitable education" (p.12).

On the other hand, in the document *Metas educativas* 2021 (Educational goals 2021) the importance of acknowledging that at present teachers face a new generation of students who must be taught by adopting innovative learning strategies is highlighted as well as the fact that: "possibly, the most relevant issue is that we have a new generation of learners, who did not have to access the new technologies, but rather were born with them, and who face the knowledge from postulates different from those of the past. This supposes a huge challenge for the teachers, who are mostly digital immigrants, as well as for schools, for those responsible for education and for those who make public policies in relation to innovation, technology, science and education."

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[1] United Nations Educational, Scientific and Cultural Organization.

[2] Organization of American States.

[3] United NationsOrganization.

[4] Information and Communication Technology.

In addition, the document *Competencias TIC para el desarrollo profesional docente* (ICT competencies for professional teacher development) admits that education in the past century does not adjust to the needs of the 21st century, and thus, it is necessary to formulate new strategies that attend to the challenges of the present era and respond to the needs of teachers and students alike, who inhabit a globalized world which is more and more demanding in the academic field. This document makes a point on the fact that professional teachers, within the process of educative innovation with the use of the ICTs, must develop different competencies: technological, communicative, pedagogical, managerial and investigational.

With regard to current policies, Resolution 2041 of 2016 can be mentioned, established by the Ministry for Education, which acknowledges that "Bachelor degree programmes should make sure that the students acquire preparation in pedagogical practice. In it, the students must understand and appropriate the class dynamics and their context, identifying the differences and modalities of the education of boys, girls, adolescents, young people and adults, and associating them with the discipline they teach and the situations, events and phenomena that said discipline brings with it" (p.6).

In conclusion, it is though different regulatory requirements that the method of educating within the framework of the technologies is regulated. However, it is important to highlight that, on occasions, educational policy is not in harmony with the reality that teachers face in the classrooms. For this reason, the instructor must be a leader who promotes quality formative actions in order to reconfigure their reality and foster continuous knowledge.

TECHNOLOGICAL CHALLENGES IN TEACHER TRAINING

The review of documents and the processes of discussion and reflection carried out by the researcher allow for the affirmation that training processes are affected by diverse technological challenges that deserve the attention of the educator, with the aim of imparting an education for a diverse and pluricultural world. The contemporary educator has to provide themselves with the tools that allow them to interpret the reality that the context implies. For this reason, there must be an academic effort that allows for the possibility of proposing comprehensive training opportunities that respond to the present times and that are in line with educational policy.

A culturally convenient pedagogy is required, which does not develop in the framework of curricula that are disconnected from real contexts and the interests of the subjects involved, but focuses on the type of educator that the society requires. It can be observed that educational policy postulates an ideal teacher, but in the actual academic practice the panorama is completely different. There are instructors who face daily challenges that, on many occasions, are unrecognised by educational policy; one of them being, the work that the teacher carries out with culturally diverse students.

As is observed in the current panorama of training processes, there is a marked tension between the relationship between educational policy and the socio-cultural contexts, where perhaps the greatest challenge lies in discovering how to train teachers for a more diverse and changing society, without ignoring the static policies that condition the training processes. The fundamental factor of educational realities is diversity, which is why it is required that teachers are capable of developing a multicultural perspective with educational alternatives that question if the current training of teachers attends to the needs of the society. For

this, the classroom must be understood as a representation of the social, cultural, economic and political fabric, where the teacher, as a social being, has the capacity to permanently explore their context in order to predict future paths and recognize cultural identities.

An imminent challenge in the training of teachers is associated with the existence of instructors who lack qualification processes and teacher updating, who are reluctant to acknowledge that technology is a reality which has to be taken advantage of as an opportunity to strengthen educational processes. Undoubtedly, technology is a social demand, which as long as it is incorporated didactically into training processes, may transform the ecology of the classroom, making use of its transversality with any area of knowledge and opening doors for pedagogical innovation.

A similar study is the one called *TICs y formación docente: formación inicial y desarrollo profesional docente*(ICTs and teacher training: inicial teacher training and professional development),which postulates three great challenges that make the incorporation of ICTs into the initial processes of teacher training difficult. First, the institutional context, which refers to the infrastructure and digital culture of the institution. The study argues that, without an optimal infrastructure and a favourable institutional context, technologies will not be taken advantage of. The second challenge is associated with the teacher and their posture in relation to digital technologies. This challenge is reduced to a fundamental question: how much work does it take the teacher to integrate ICTs in their curriculum or to decide how to use technology in the classroom? Finally, the third challenge is linked to innovation and its relation to the academic field (Swig, 2015).

Today's teacher must be capable of responding to the technological challenges that have opened cultural, educational and social gaps; interacting

with new models and schemes in training scenarios, without ignoring that, in the last few years, new models have been installed that schematize education and that are oriented towards competitiveness, obscuring, in some cases, the conception of the teacher. One of the most imminent technological challenges has been virtual education, where, to certain extent, it is ignored that the pedagogical practice and the interaction with the context are of vital importance in order to convey the teachings that all instructors must develop. Although technology allows for education to reach difficult to access areas, personal interaction and face-to-face dialogue constitute essential tools in the training process of teachers.

The information revised allows for the visualization of a broad panorama for the inclusion of ICTs in different countries that join efforts through programmes and educational policies in order to motivate teachers to make pedagogical use of technology as a tool to support the teaching of their discipline. The transformation of the school has been taking place based on social and cultural reforms; thus, anact as vital as is the training of teachers should attend to and comprehend the complexity of the reality, and respond to the current educational, social and cultural demands. The mission of the educator must be geared towards promoting the reconstruction of the social fabric, including equality and social justice.

DISCUSSION

There is a concern shared by different countries that wish to close the gaps that training processes have opened. One of these gaps is associated with educational policy, by looking at it from an official, political and economic point of view, neglecting the human component and ignoring the real contexts where these policies will be applied. The issue of the training of educators is still of great importance. To that effect, Kosnik (2015)in

her conference *The quality of education depends directly on the quality of teachers, educators and curricula* makes a special mention of the magisterial conference *Priorities in teacher education: the 7 key elements of pre-service preparation*, in which is given a detailed account of the characteristics that teachers should have in order to impart knowledge to their students by making use of quality and creative strategies, but that they should go beyond their students and allow for the transmission to others from their daily actions.

After the review of the literature and of the reports by organizations that have researched the phenomenon of teacher training and educational policy, it can be said that more than training for survival, it is sought to form a being that is capable of using technologies in the search in the improvement of the conditions of contexts through innovation. Vaillant (2004) states that "it is no longer enough that the teacher or professor knows what they are going to teach and that they have a good training in the teaching and learning process. The complexity of the task demands a change of paradigm."

(Medina A. & Medina, 2010) affirm that:

> "Teacher training has to be involved in the social realities, especially in facilitating and fostering the life projects of each person, in all their amplitude and plurality, being aware of the transforming role of each practice, in each micro and meso-society; and thus, constructing new didactic events, which lead to a profound reflection around teaching and learning processes, in each classroom and in learning communities. Professionalization depends on understanding the challenges of teaching and learning, becoming aware of the value of the formative task" (Medina, Domínguez and Medina, 2010, p. 32).

Likewise, Edgar Morin (1999) refers to the fact that teacher training processes should project a teacher who "acknowledges and analyses multidimensional phenomena (…), who recognises and analyses realities that are at the same time solidary and conflictive, someone who respects what is diverse and also acknowledges unity.

On the other hand, it is said that the digital era has brought about changes in the way people are informed and information is shared, the way of communicating and the way in which knowledge is built, and that all of these have an impact in the new role of the educator, no longer an instructor of techniques and a communicator of processes, but someone who accompanies and guides the learning process of the student. This new concept allows for the acknowledgement of the importance of the training of teachers in the use and appropriation of technology, considering this field, more than a challenge to be an opportunity to strengthen educational practices that lead to the improvement of learning processes.

CONCLUSIONS

The training practices of educators should progressively transform in harmony with social, economic and cultural conditions, attending to educational policies, without ignoring the existence of political priorities that, on occasions, overlook the realities of the contexts. Thus, the educational practice must be reconfigured in order to understand cultural changes and accept learning environments mediated by technology, which are essentially a changing scenario that pushes teachers to, initially, understand the context in order to afterwards teach it to the teachers in training.

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