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## Digital Competencies In The Professionalization Of Teachers Case: Ecuadorian Amazonia

### Competencias Digitales En La Profesionalización Docente Caso: Amazonia Ecuatoriana

**Katty Elizabeth Pérez Imaicela**

Master's Degree in Educational Technology and Digital Competencies.

National University of Education UNAE

<https://orcid.org/0000-0003-4810-6720>

**Franklin Roberto Quishpi Choto**

Master in Regional Development and Territorial Planning

Milagro State University, UNEMI

<https://orcid.org/0000-0001-7121-7117>

**Erika Gabriela Quishpi Contenido**

Master in Information Systems, specializing in business intelligence and big data analytics.

Milagro State University, UNEMI

<https://orcid.org/0009-0003-5702-3289>

**Jessica Caterine Robayo Velasco**

Master in Economics

Milagro State University, UNEMI

<https://orcid.org/0009-0001-4425-9845>

### Summary

In recent years, higher education has had to create spaces that allow students to develop various competencies, among them digital competencies. In vulnerable geographical contexts such as the Ecuadorian Amazon, it is necessary to strengthen this type of competencies. This study presents a systematic review of studies conducted in the last five years on the development of digital competencies and teacher professionalization. We analyzed 10

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Corresponding Author

[katty.perez@unae.edu.ec](mailto:katty.perez@unae.edu.ec)

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articles taken from databases such as Scielo, Google Scholar and Redalyc applying criteria of inclusion of search terms in the title or abstract, original articles where the central axis is digital competencies, teacher professionalization, distance higher education. It was found that digital competencies are essential in the professional development of students and allow them to improve their skills when facing the reality of work. In the Ecuadorian Amazon, obtaining this type of competencies becomes a challenge due to the characteristics of the area, however, professionalization programs such as the National University of Education (UNAE) are designed with the purpose of contributing to the development of these competencies in the course of their careers. In the province of Sucumbíos alone, 498 teachers will be incorporated by the year 2025.

**Key words:** Digital competencies, teacher professionalization, higher education, Amazon, online modality, Ecuador.

### Resumen

La educación superior en los últimos años ha tenido que generar espacios los cuales permitan que los estudiantes desarrollen varias competencias, entre ellas se encuentran las competencias digitales. En contextos geográficos vulnerables como es la amazonía ecuatoriana, es necesario fortalecer este tipo de competencias. En este estudio se da a conocer una revisión sistemática de los estudios realizados en los últimos cinco años sobre el desarrollo de competencias digitales y la profesionalización docente. Se analizaron 10 artículos tomados de bases de datos como Scielo, Google Scholar y Redalyc aplicando criterios de inclusión de los términos de búsqueda en el título o en el resumen, artículos originales donde el eje central sea las competencias digitales, profesionalización docente, educación superior a distancia. Se obtuvo que las competencias digitales son esenciales en el desarrollo profesional de

los estudiantes y les permite mejorar sus habilidades al momento de enfrentarse con la realidad laboral. En la amazonía ecuatoriana obtener este tipo de competencias se vuelve un desafío debido a la caracterización de la zona, sin embargo, programas de profesionalización como el caso de la Universidad Nacional de Educación (UNAE) están diseñados con la finalidad de aportar a que se desarrollen estas competencias en el transcurso de su carrera. Sólo en la provincia de Sucumbíos para el año 2025 son 498 los docentes incorporados.

**Palabras clave:** Competencias digitales, profesionalización docente, Educación superior, Amazonía, modalidad en línea, Ecuador.

## Introduction

The Secretary of Higher Education, Science, Technology and Innovation (SENESCYT) presented strategies for Higher Education in the Ecuadorian Amazon (2018-2021) with the aim of strengthening existing capacities in public higher education institutions, in this sense, student teachers who are in the exercise of the role of teacher but do not have a bachelor's degree, are part of the public called professionalization teachers.

The National University of Education has a professionalization program, which allows teachers in the Amazon to acquire their university degree through distance education. In higher education, students and teachers agree that it is important to develop students' employability competencies along with academic knowledge and skills (Garcés, 2020b).

Among these competencies are digital competencies, which are essential for citizens to actively participate in a digitally advanced society (Silva-Quiroz and Rioseco-Pais, 2025). Students throughout their third level training use various technologies, which allows them

to develop skills, which impact their digital competencies (European Commission, 2019).

In Ecuador and specifically in the Amazon, it is important to address the issue of the development of digital competencies in higher education, since there is a digital divide that limits the correct use of these competencies.

## Methodology

Systematic review researches have the purpose of grouping the theoretical aspect of a specific topic, analyzing the knowledge obtained through the results that will serve as a basis for other researches (Rosário et al., 2014). A systematic literature search was conducted in academic databases such as REDALYC, Google Scholar, SCIELO, with an antiquity of 5 years.

The inclusion criteria were search terms in the title or abstract, original articles where the central axis is digital competencies, teaching professionalization, distance higher education.

Table 1: Incidence of terms

<b>Digital competencies</b>	REDALYC 933 articles, Google Scholar 16 900 articles, Scielo 203 articles (Indexed)
<b>Teacher professionalization</b>	REDALYC 179 articles, Google Scholar 5 920 articles, Scielo 32 (Indexed)
<b>Distance higher education</b>	REDALYC 167 articles, Google Scholar 3 070 articles, Scielo 10 articles (Indexed)

The articles found were classified by criteria and only those that contributed to the research were selected, including articles whose

subject matter contained models and strategies for teacher training and the Ecuadorian Amazon, ending with 10 articles.

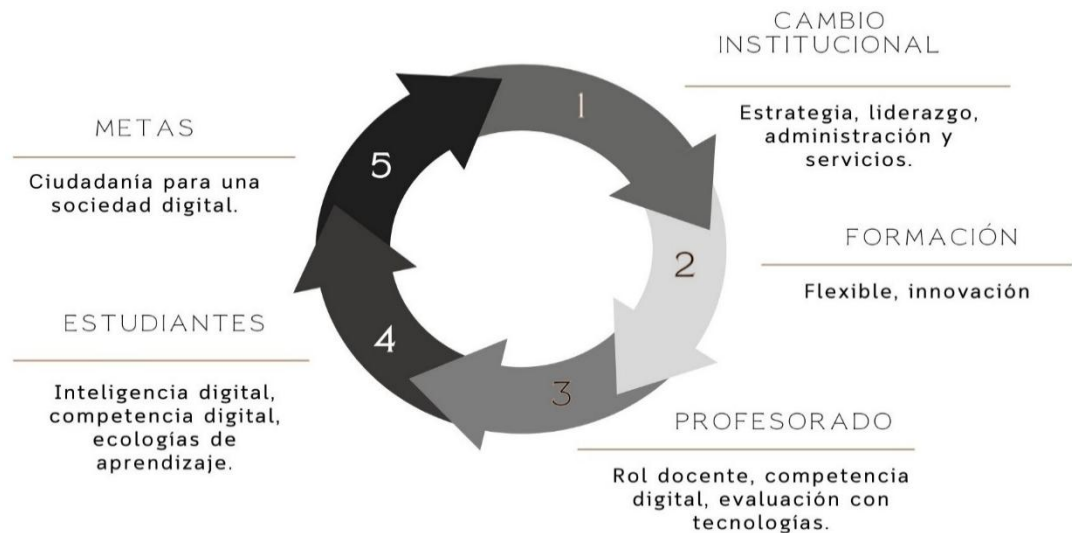
## Results

Distance education is defined as a technological communication system that facilitates bidirectional and multidirectional interactions, eliminating time and space barriers by making learning possible anywhere (Cruz et al., 2023). For Ballesteros et al. (2021) this modality "distributes study time in a more flexible way than face-to-face and offers a more intense and interactive educational process in the sense that it provides more time for teacher-student relationships" (p.74).

Distance education involves the learner taking responsibility and self-discipline, which makes it especially suitable for higher education where participants go voluntarily (Bailey et al., 2020).

In recent years, Higher Education institutions have had to reconsider and reorganize their academic priorities and objectives, focusing on the implementation of new digital competencies. According to Prendes-Espinosa (2022) they are summarized in 4 axes: the role of the university itself, the redefinition of the teaching and learning process, the training of teachers and students, and the establishment of objectives especially oriented to social responsibility. Figure 1 shows in detail what the author mentions.

Figure 1: Challenges of Higher Education



a

Source: Own elaboration based on Prendes-Espinosa (2022, p.25).

González-Zamar et al. (2020) indicate that it is essential for students to obtain the necessary digital competencies in the teaching and learning process in order to deal with information, communication, content production, security and problem solving in their professional future.

In particular, in the higher education scenario, the virtual or distance mode is supported by virtual platforms, technological tools, social networks and models that use ICT as part of teaching strategies. The students that are part of the mentioned educational level, under the distance modality, acquire formally or informally, digital competences in their training.

ICTs are a support tool that offers a wide range of integration to Distance Education (DE); among them are: Virtual Teaching and Learning Environments (VLE) that are the means of communication between the teacher and the student through sending and receiving activities, messages, forums and chat; video platforms that allow synchronous meetings and other applications. At the same time,

ICTs in EaD play a fundamental role if they are used as a resource and strategy that favors the development of digital competencies.

### **Challenges for the development of digital competencies in professional teachers in the Ecuadorian Amazon.**

The Amazonian context of Ecuador is not homogeneous, but diverse, plural and complex. Each people and nationality has its own expressions, customs and realities. That is why it is a challenge to meet all the educational needs that arise.

The World Bank Group (2020) indicates that in "Latin America and the Caribbean, only 30% of children from low socioeconomic level (SES) families have access to a computer, compared to 95% of children from high SES families" (p.14). Based on these figures, it is a challenge to promote virtual education in an isolated territory where there is a lack of many things such as internet access, electronic devices or knowledge about the use of virtual teaching platforms.

Diaz (2022) mentions that the UNAE support center has 314 teacher-students belonging to Morona Santiago, "80% have a laptop, 70% have a cell phone that has access to social networks and messaging applications such as Facebook, Youtube, Messenger or Whatsapp. At work sites or at home only 60% have access to the Internet, while 40% must go out to strategic areas to carry out synchronous and asynchronous processes with teachers" (p.86).

The digital divide, as mentioned by Gutiérrez-Provecho et al. (2021), extends where there are not certain structural circumstances that favor not only the technical mastery of the devices, but also the mental openness to other realities brought about by the simultaneous, synchronous and horizontal modalities of the digital world.

This is why Ramón and Dumaguila (2024) report that "the conditions evident in the Amazon region present challenges for teacher training



and practice due to the geographic dispersion of communities, cultural and linguistic diversity, as well as the lack of access to educational resources (p. 45). These challenges have contributed to differences in quality and access to education compared to other regions of the country.

The teachers who teach in the Amazonian territory do not have a continuous training program that allows them to be trained in the new pedagogical models. And thus be able to adapt them according to the needs they observe in the territory. Rivero et al. (2019) explain that teacher preparation is based on establishing a link between professional competence and their performance in social interaction according to different contexts. That is, they must develop: digital competencies that entail properly operating digital devices, learning and working in a digital society.

In the province of Sucumbíos, there has been greater interest in education due to its ethnographic, linguistic and geographic diversity, which has motivated teachers in training to seek to improve their teaching-learning processes (Ramón and Dumaguila, 2024). Mantilla-Falcón and Lozada (2023) explain the reality of Amazonian teaching in the province of Sucumbíos, by means of a survey of 225 teachers where they obtained the following results, which are shown in Table 2:

Table 2: Level of education of teachers in Sucumbíos

Instruction	Teachers	%
Baccalaureate	29	12,89
Technologist	28	12,44
Third level	161	71,56
Fourth level (Postgraduate)	7	3,11
Total	225	100

Source: Own elaboration based on Mantilla-Falcón and Lozada (2023).

Mantilla-Falcón and Lozada (2023) conclude that "25% of teaching professionals have high school and technologist level training; however, by the year 2019 this level of instruction is already considered as a third higher technical-technological level. On the other hand, education professionals with postgraduate degrees represent only 3.11%; this may be due to several factors such as economic resources and technical facilities to continue their training" (p.9).

#### **Professionalization teacher training programs and strategies**

The Secretary of Higher Education, Science, Technology and Innovation (SENESCYT) presented strategies for Higher Education in the Ecuadorian Amazon (2018-2021) Under this strategy on June 6, 2018, Agreement No. 000019 was signed with its Addendum No.005 of May 20, 2021, ending in December 2021. dated May 20, 2021, ending in December 2021, whose objective was the coordination of the process of teacher professionalization between the Ministry of Education (MINEDUC) and the National University of Education (UNAE), for the training of teachers of the fiscal teaching profession who do not have a third level degree, in the career of Basic Education. Currently, 364 student-teachers are enrolled in the province of Sucumbíos and 219 in the province of Orellana student-teachers are enrolled in the province of Orellana. By 2025 there will be 498 teachers incorporated in the province of Sucumbíos under this program.

UNAE's Educational-Pedagogical Model is based on educational technology and innovative approaches that encourage active student participation and collaborative learning. It recognizes the importance of digital and informational competencies in the process of teacher training for the 21st century.

UNAE's teacher training is oriented towards the integral development of the human being that includes knowledge, skills, attitudes, emotions and values worked through teaching-learning processes oriented towards the construction and permanent reconstruction of knowledge, mediated by the practical component as the backbone of teacher training that allows theorizing the practice and experiencing the theory; giving, in addition, room for the generation of knowledge integrating projects.

based on the realities and school contexts that are the objects of educational research, approached with the articulation of the substantive functions for the enrichment of teaching with the experiences generated in the linkage, research and innovation projects and pre-professional practices (UNAE, 2022a, p.6).

## Conclusions

Distance higher education guarantees access and permanence in the training process for teacher-students belonging to vulnerable groups. The demand for teacher training is concentrated in provinces belonging to the Amazon region, which have a higher poverty index. Therefore, it is necessary to pay more attention to this group.

Universities such as the National University of Education (UNAE) offers careers in basic education and intercultural bilingual education, under the distance modality, for teachers who do not have a third level degree, but with years of experience in this role. This university has implemented an educational project that allows higher education from the territory of teacher-students, providing the opportunity to develop digital skills that contribute to the education of children and adolescents in their environment.

In the Ecuadorian Amazon due to its diversity not only cultural but linguistic and due to the digital divide that is generated by not having access to resources such as internet, a device. It has caused a digital divide compared to other regions of the country. Therefore, the development of digital competencies are necessary in the teaching and learning process to address with guarantees the information, communication, content production, security and problem solving in their professional future.

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