DIGITAL COMPETENCE IN THE INITIAL TRAINING OF THE TELESECUNDARIA TEACHER. CASE STUDY

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ABSTRACT

The development of digital competence is undoubtedly an issue that has been subject of numerous research and development proposals at the institutional level in recent years (Punie and Breco, 2014, Pech and Prieto, 2017, Adell, 2010, Silva Mirada, Gisbert, Morales and Onetto, 2016), knowing its meaning and the relationship of this with the initial teacher training is essential because it allows to know the way in which teacher training schools face the challenge of forming competent citizens for life in the knowledge society (Lion, 2012). A quantitative research is presented, through an exploratory factorial analysis, whose objective is to identify the level of digital competence of the student and the factors associated with its development. A survey was applied to 248 students who are studying the Bachelor in Teaching and Learning in Telesecundaria. The results allow to identify different levels of competence. However, digital evidence shows a positive perception from students in the three dimensions established to measure their digital competence. Therefore it would be advisable to design an evaluation instrument that allows to contrast what students say they know how to do, with what they really do, as well as to observe the type of activities that are developed within a normal school in order to obtain information regarding the educational policy implemented at the institutional level.

KEYWORDS

Digital Competence, Initial Teacher Training, Telesecundaria, Basic Education

1. INTRODUCTION

The development of digital competence has become a priority for governments and international organizations around the world (Punie and Breco, 2014, Adell, 2010, UNESCO, 2008, ISTE, 2016). The above has its origins in the Definition and Selection of Competences Project (DeSeCo) developed by the Organization for Economic Cooperation and Development (OECD), whose main objective is to determine the competences that are considered necessary for the 21st century citizen. Although this project began in 1997, it was not until 2003 that a relevant framework was created together with the final report that led to a series of transformations in the educational systems of various parts of the world.

That is why in 2006 the European Commission proposes eight key competences for lifelong learning, where digital competence is included, defining it as:

the safe and critical use of information technologies for work, leisure and communication. It is based on the basic ICT competences: the use of computers to obtain, evaluate, store, produce, present and exchange information and communicate and participate in collaboration networks through the Internet (Lion, 2012, p.17).

When carrying out an analysis of the investigations that have been made around the subject of digital competence, it is clear that there is not a unique definition because it is defined, according to the purposes established in each investigation. However the aforementioned by the European Commission shows that being digitally competent not only involves the use of technological devices and tools but also requires the development of computer and information skills.

In this regard Adell (2010) defines digital competence in terms of 5 basic elements: 1) informational competence, 2) technological or computer skills, 3) multiple literacy's, 4) generic cognitive competence and 5) digital citizenship.

Unfortunately in Mexico there is no clarity regarding the way in which the educational system strengthens the development of digital competence in students, and considering that teachers play a determining role in the creation of learning environments that propitiate the pedagogical use of ICT in its daily performance, it has been considered opportune to analyze the way in which teacher training schools face the challenge of forming competent citizens for life in the knowledge society (Lion, 2012).

That is why a questionnaire was designed to measure the digital competence of the future teacher of Telesecundaria with the purpose of identifying strengths and weaknesses that highlight the possible relationship between the type of activities proposed by teachers and the development of digital competence of student. It is important to note that these results are part of a broader research called "The pedagogical usability of ICT and its relationship with digital competence, in the initial teacher training of Telesecundaria".

2. METHOD

The research is proposed from a quantitative approach, through a case study, to identify the digital competence of teacher-training students.

2.1 Development of the Instrument

The questionnaire was prepared after carrying out a systematic search for the identification of instruments that have been applied by other researchers at a national and international level. Exact questions of the instruments reviewed were not transcribed but were considered as an important basis. The works from Zúñiga (2016), Pech (2016) and Esteve (2015) were analyzed in greater depth, which developed their research in higher education contexts related to the educational field; This is how the three dimensions and the fourteen indicators that make up the variable of "digital competence" that was intended to be measured with this instrument were chosen.

The survey consists of 48 items or questions, whose answers are presented on a scale Likert type, which includes the options "Incapable, A bit capable, Quite capable and Very capable". The application of the instrument was self-administered online through the LimeSurvey application, which is a free software for the development and application of surveys very simple and easy to use.

2.2 Subjects / Population

It was applied to 320 students representing the population of students enrolled in the Bachelor of Teaching and Learning in Telesecunaria, offered by the Benemérita Escuela Normal Veracruzana "Enrique C. Rébsamen" in the city of Xalapa, Veracruz, Mexico.

2.3 Validity

The validity of contents was determined through the review of experts, which were selected given their outstanding trajectory and knowledge in the field of digital competence in initial teacher training; Although there were some comments related to the structure of the indicators, in general, the judges considered the items designed in each dimension to be appropriate and relevant.

As far as the construct validity is concerned, according to Castro and Galindo (2000), the Kaiser Meyer-Olkin test (KMO) and the Bartlett sphericity test help to verify if the sample is acceptable for the factoring of the variables.

Table 1.

KMO and Bartlett test		
Sampling adequacy measurement	Kaiser-Meyer-Olkin	.765
Bartlett's sphericity test	Aprox. Chi-square	2560.611
	gl	990
	Sig.	.000

From the results it is concluded that the sample is acceptable for the factorization of the variables, reaching a KMO index of 0.765 (very close to 0.8, which is normally required), while the correlation matrix was spherical ($p < 0.01$), and, consequently, analyzable from the factorial point of view.

Likewise, for the reliability analysis, the Cronbach's Alpha coefficient was used, resulting in a value of 0.976, as a result the tool is considered reliable to measure what is intended to be measured.

Table 2.

Cronbach's Alfa tool		
Reliability statistics		
Cronbach's Alfa	Cronbach's Alfa based on standardized elements	N of elements
.976	.976	45

3. RESULTS

The digital competence of the student was measured by three dimensions: 1) field of learning, 2) field of information and communication and 3) field of digital culture, in a general way, the results obtained in each dimension will be presented below.

The questionnaire was answered by students whose ages ranged between 18 and 24 years, of which 64% are women and 36% men, which could be justified by virtue of the fact that in Mexico the teachers' association that works in basic education is formed mostly by females.

In dimension 1 Scope of learning, the results show a positive perception on the part of the students (Graph 1).

Graph 1. Concentrate dimension 1. Source: Own elaboration

49% of the participants consider themselves capable enough to identify software that supports their academic activities, use ICT as an instrument that strengthens reflective and critical thinking, use technology to improve the quality of their products or evidence of learning (tasks, investigations, essays, writings, presentations, etc.) as well as to obtain the maximum benefit of the technology for personal and professional purposes.

In dimension 2 Scope of information and communication, the situation is not very different, since 44% of students consider themselves quite capable of using Internet browsers, doing some work or project, consulting texts, documentary videos, recordings, podcasts, images, among others, communicate effectively in digital environments, perform teamwork and distance through the use of ICT, in addition to collaborating in communities and/or learning networks about their area of study and/or interest.

Graph 2. Concentrate dimension 2. Source: Own elaboration

However, the graph of dimension 2 shows that there is a high percentage of students who say they feel very capable of performing activities related to the search, generation and dissemination of content, which makes a lot of sense because at curricular level the current curriculum (SEP, 2019) promotes the use of ICT mainly for information purposes.

On the other hand, in dimension 3 Scope of digital culture, students' perception is even more positive, since among the 50% who consider themselves to be quite capable and the 32% who consider themselves to be very capable, more than 80% of the students have considered to have the ability to stay informed through digital media and participate actively in decision making, act responsibly and civically in the digital environment, know and respect intellectual property rights, consider the ethical and legal aspects of they share on the internet, as well as conduct themselves with respect and ethics within the digital environment.

Graph 3. Concentrate dimension 3. Source: Own elaboration

In general, and considering all the answers provided by the students, dimension 2 is the one in which the students obtained the best results, which can be the result of the multiple activities that they carry out inside and outside the classroom that have to do with information search, use of social networks and other recreational activities they perform.

4. CONCLUSION

Although the results allow us to have a general panorama regarding the perception of teacher-training students in relation to their digital competence, it is opportune to contrast this information with the comments made by the teachers who are training them, in order to identify if they are being trained since the beginning of their studies with strategies, methodologies and activities to develop their digital competence.

It is also essential to observe the type of activities that are developed within the teacher-training collage, in relation to the strengthening of digital competence, on the part of students, teachers and educational authorities which can provide us information regarding the educational policy implemented at the institutional level.

In a future work, it would be convenient to design an assessment tool that allows us to contrast what the students say they know how to do, with what they really do, that is, an evaluation test that highlights their level of digital competence.

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