



Digital competencies in university teachers

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Abstract

Digital competence in teachers are skills, knowledge and attitudes required for the use of technologies in the creation, management and development of information and knowledge for the achievement of student learning. The objective of the study was to determine the digital competence of teachers at a Peruvian university. Method: The study was observational and cross-sectional, and the "Digital Competence for Educators" self-assessment survey was applied to a sample of 365 teachers. Descriptive and inferential statistics were used to identify associations with some variables of interest. Results: Teachers achieved the digital competence of Integrator. Discussion: It is necessary to improve competencies by providing training on various technological tools and analyzing their adaptation to current teaching practices. Conclusions: The evaluated teachers have digital competence at an integrative level.

KEYWORDS: TEACHING COMPETENCIES; SKILLS; EDUCATION; EDUCATIONAL SKILLS; USES OF TECHNOLOGY IN EDUCATION

Introduction

The COVID-19 pandemic has forced the adoption of e-learning, which requires university teachers to develop digital competencies. Being digitally competent implies understanding the social and cultural impacts of technologies and adapting to a constantly changing technological environment. The formation of these skills is fundamental to improve teaching (González Calatayud et al., 2018, Suárez-Guerrero et al., 2021). Despite being experts in their fields, teachers must acquire and demonstrate digital competencies to offer a comprehensive and inclusive education (Santos et al., 2021). Knowing their level of development in these competencies can help identify and close gaps. This study focused on determining the digital competencies of university teachers at a university in Lima, Peru.

Theoretical framework

Digital competencies involve the knowledge, skills and attitudes related to information and communication technology (ICT), to communicate, manage information; collaborate; create and share content in an effective, efficient, ethical and reflective manner (Ilomäki et al., 2011; Ferrari, 2012).

Methods

Design

Observational, cross-sectional study involving virtual self-assessment and digital competence of university teachers.

Population and sample

Conformed by 1455 professors: 696 appointed (PA) and 759 contracted (PC) from a Peruvian university. The sample consisted of 304 teachers: 304 PA and 145 PC, obtained through the formula for the estimation of proportions, confidence level of 95% and a p value (probability of having digital competencies) of 0.5. Sampling was by quotas. After recruitment, the participation of 365 teachers was obtained: 220 PA and 145 PC.

Instrument

The European Framework for Digital Competence of Educators (DigCompE-du) by Redecker and Punie (2017) was used. The DigCompEdu recognizes six areas of teacher competence: professional engagement, digital content, teaching learners, assessment and feedback, empowerment, and developing students' digital competence. It classifies digital competence as Beginner [<20 points], Explorer [20 to 33], Integrator [34 to 49], Expert [50 to 65], Leader [66 to 80], and Pioneer [>80].

Procedure

The invitation was sent by e-mail to all teachers between March and June 2020. Informed consent was requested from each participant. The study was approved by the Institutional Ethics Committee of the Universidad Peruana Cayetano Heredia.

Data analysis

Descriptive statistics were used to calculate average scores in the complete test and for each dimension. Percentages were identified for each area and level reached, then the association and correlation of personal and work variables with the overall digital competence and by dimension was analyzed. The statistical significance was obtained with a value of $p < 0.05$, through the Mann Whitney U-test and the Kruskal Wallis test because the data did not present normality.

Results

The digital competence by area of competence, in all of them reached "Integrator", except in the area of "Evaluation and feedback" which presented 35.60% for "Explorer" (table 1).

Table 1. Digital competence by area of competence of teachers at a private Peruvian university, 2020

Digital Competence	Area of Competence													Total
	PE		DC		TL		EF		ES		DSDC			
	n	%	n	%	n	%	n	%	n	%	n	%		
Beginner	27	7,40	41	11,23	57	15,60	52	14,30	92	25,20	72	19,70	12	3,30
Explorer	120	32,90	87	23,84	93	25,50	130	35,60	90	24,70	69	18,90	81	22,20
Integrator	127	34,80	131	35,89	110	30,10	116	31,80	101	27,70	144	39,50	154	42,20
Expert	71	19,50	79	21,64	86	23,60	47	12,90	44	12,10	68	18,60	90	24,70
Leader	17	4,70	23	6,30	13	3,60	16	4,40	26	7,10	9	2,50	23	6,30
Pioneer	3	0,80	4	1,10	6	1,60	4	1,10	12	3,30	3	0,80	5	1,40

PE = Professional engagement, DC = Digital content, TL = Teaching and learning, EF = Evaluation and feedback, ES = Empowering students, DSDC = Developing students' digital competence

Discussion

Teachers achieved the digital competence of "Integrator". It is crucial to provide training on various technological tools and analyze their adaptation to current teaching practices (Cabero-Almenara et

al., 2021). It is necessary to improve “assessment and feedback” to achieve greater inclusion, personalization, and engagement. In addition to planning and creating content, teachers must constantly assess students to verify their knowledge and provide appropriate feedback. However, studies indicate that teachers do not share information frequently with their students, limiting themselves to experiences and opinions without resolving technological concerns or facilitating digital learning (Pérez-Díaz, 2019). This prevents students from acquiring competencies to manage, retrieve, analyze, and synthesize information effectively (Díaz Vera et al., 2019; Peled, 2020; González-Calatayud et al., 2018).

The teacher must drive areas of knowledge to have a suitable profile (Aguirre-Aguilar and Ruiz-Méndez, 2012; Tejedor et al., 2020), supported by an academic ecosystem that facilitates the weighted use of technology. Before the pandemic, teachers did not recognize the urgency of digital competencies, although they were necessary. PozúHeredia, Lima, Peru, from September 30 to October 4, 2024. Franco et al. (2020) highlighted the importance of ethical commitment when using ICT, urging to sensitize teachers to their relevance.

Conclusions

The university teachers evaluated have digital competence at the Integrator level, which implies that they are able to experiment with digital technologies to integrate them into their teaching practices, but still do not have mastery at the expert level.

Limits

Data collection coincided with the pandemic confinement. This situation accelerated the implementation of digital tools and could have influenced teachers' responses. Variables such as connectivity and accessibility to digital tools, which could influence the perception of digital competencies, were not measured.

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