

IMPACT OF DIGITAL TEACHING COMPETENCE ON THE QUALITY OF HIGHER EDUCATION: A LITERATURE REVIEW

ALFREDO DEMETRIO MORENO LLACZA

UNIVERSIDAD SAN IGNACIO DE LOYOLA. INGENIERO ESTADÍSTICO
EMAIL: alfredo.moreno@epg.usil.pe, ORCID ID: [HTTPS://ORCID.ORG/0000-0003-4028-0396](https://ORCID.ORG/0000-0003-4028-0396).

MARÍA DE LOS ÁNGELES SÁNCHEZ TRUJILLO

UNIVERSIDAD SAN IGNACIO DE LOYOLA. DOCENTE
EMAIL: maria.sancheztr@usil.pe, ORCID ID: [HTTPS://ORCID.ORG/0000-0002-5228-4688](https://ORCID.ORG/0000-0002-5228-4688).

ABSTRACT

The objective of this study is to systematically examine how digital teaching competence influences the quality of higher education. A structured search was conducted in the Scopus and SciELO databases, yielding 220 initial records. After applying strict inclusion and exclusion criteria, 36 articles were selected for in-depth analysis. The findings demonstrate a strong consensus on the pivotal role of digital competencies in fostering pedagogical innovation, enhancing student learning outcomes, and sustaining educational processes in hybrid and online environments. Key factors identified include continuous professional development, effective integration of educational technologies, and the institutionalization of digital skills training. The review also reveals significant challenges such as methodological inconsistencies in evaluation instruments and structural disparities in digital infrastructure, particularly in Latin American contexts. Strengthening digital competence should therefore be embedded within broader institutional policies rather than treated as isolated efforts. The study concludes by proposing future interdisciplinary research and the development of targeted training strategies to address contextual needs and promote inclusive, high-quality higher education.

Keywords: Digital teaching competence, higher education, educational quality, pedagogical innovation, educational technology.

INTRODUCTION

Limited digital proficiency among university faculty significantly undermines the quality of higher education. The lack of skills in emerging technologies, virtual platforms, and collaborative tools restricts instructors' ability to provide dynamic and innovative learning experiences, adversely impacting student engagement and academic performance (Grados et al., 2023). As Haleem et al. (2022) emphasize, continuous professional development in digital competencies is essential for adapting to hybrid and online education models. Strengthening educators' digital skills is therefore critical for enhancing educational quality and preparing graduates for modern labor market demands. UNESCO (2024) highlights that accessible, cost-effective training programs are key to supporting digital upskilling in higher education institutions, particularly in developing contexts.

Globally, this digital skills gap remains a barrier to the advancement of contemporary education. According to UNESCO (2023) and the OECD (2023), nearly half of university faculty lack sufficient digital competencies, limiting the implementation of innovative pedagogical strategies and access to current educational resources. The challenge is especially pronounced in Latin America, where 53% of faculty report low technological proficiency, directly affecting educational quality and graduate readiness (UNESCO, 2024). In Peru, the issue is even more acute: 62% of professors struggle to integrate digital tools into their teaching, and only 28% have done so effectively despite existing training initiatives (Ministry of Education of Peru, 2021; Auris et al., 2022).

This technological gap is driven by structural factors, including inadequate initial training, lack of ongoing development programs, and limited investment in technological infrastructure. As Arellano and Andrade (2020) argue, these deficiencies reduce teaching innovation and compromise students' preparedness for digital professional environments. In response, this study seeks to examine the underlying causes, consequences, and potential strategies to strengthen digital competencies among faculty. According to UNESCO (2024), enhancing educators' digital skills is essential for educational innovation, quality assurance, and institutional competitiveness in the digital age.

THEORETICAL FRAMEWORK

The Theory of University Educational Quality, rooted in the foundational work of Joseph M. Juran, has evolved to encompass multidimensional perspectives tailored to higher education. Scholars such as Harvey and Green (cited in Al Faruq et al., 2023) have advanced this adaptation, emphasizing that quality goes beyond standard compliance to include continuous academic improvement, student satisfaction, and curricular relevance in relation to societal and labor demands (Abimbola et al., 2021). From this viewpoint, quality integrates learning effectiveness, administrative efficiency, access equity, and academic pertinence, demanding an institutional culture centered on excellence and innovation (Al Faruq et al., 2023; Wajdi et al., 2023).

Complementing this, the Theory of University Teaching, rooted in Paulo Freire's emancipatory pedagogy, redefines higher education as a dialogical and transformative process (Gerhardt, 2023; Sinwell, 2022). Freire's approach emerged amidst Latin America's socio-political upheavals (Barros et al., 2024), advocating for teaching as a critical, participatory act that empowers students to transform their realities. In this model, the educator functions as a facilitator of critical thinking and ethical engagement, bridging academic knowledge and social relevance.

Within this paradigm, university teaching competencies are conceived as an integrated set of knowledge, skills, and values that enable educators to innovate pedagogically and respond to dynamic academic contexts (Pérez-Penup & Romero, 2024). These competencies include didactic, digital, research, and communication skills (Cardoza et al., 2023), fostering comprehensive instructional profiles. They are further classified as generic or specific, and as instrumental, interpersonal, or systemic, all contributing to high-quality, inclusive education (Torres & Hernández-Gress, 2021; Dervenis et al., 2022).

Quality higher education is thus defined by its responsiveness to excellence, equity, and social impact (Camilleri, 2021; Zayachuk, 2024). It encompasses curriculum relevance, innovation, and inclusion while promoting cultural diversity and international knowledge exchange (Matsieli & Mutula, 2024; Alam et al., 2025). From a managerial perspective, Juran's Trilogy—planning, control, and improvement—has been successfully applied in diverse contexts such as Islamic universities and religious schools (Al Faruq et al., 2023; Wajdi et al., 2023), while Total Quality Management (TQM) emphasizes leadership and stakeholder focus as key to institutional enhancement (Abimbola et al., 2021).

Freire's principles continue to influence transformative education globally, as demonstrated by their integration in management education (Barros et al., 2024) and grassroots movements in South Africa (Sinwell, 2022). Finally, as Torres and Hernández-Gress (2021) argue, structured self-assessment models provide practical tools for evaluating and developing teaching competencies, reinforcing the ongoing professionalization of academic practice.

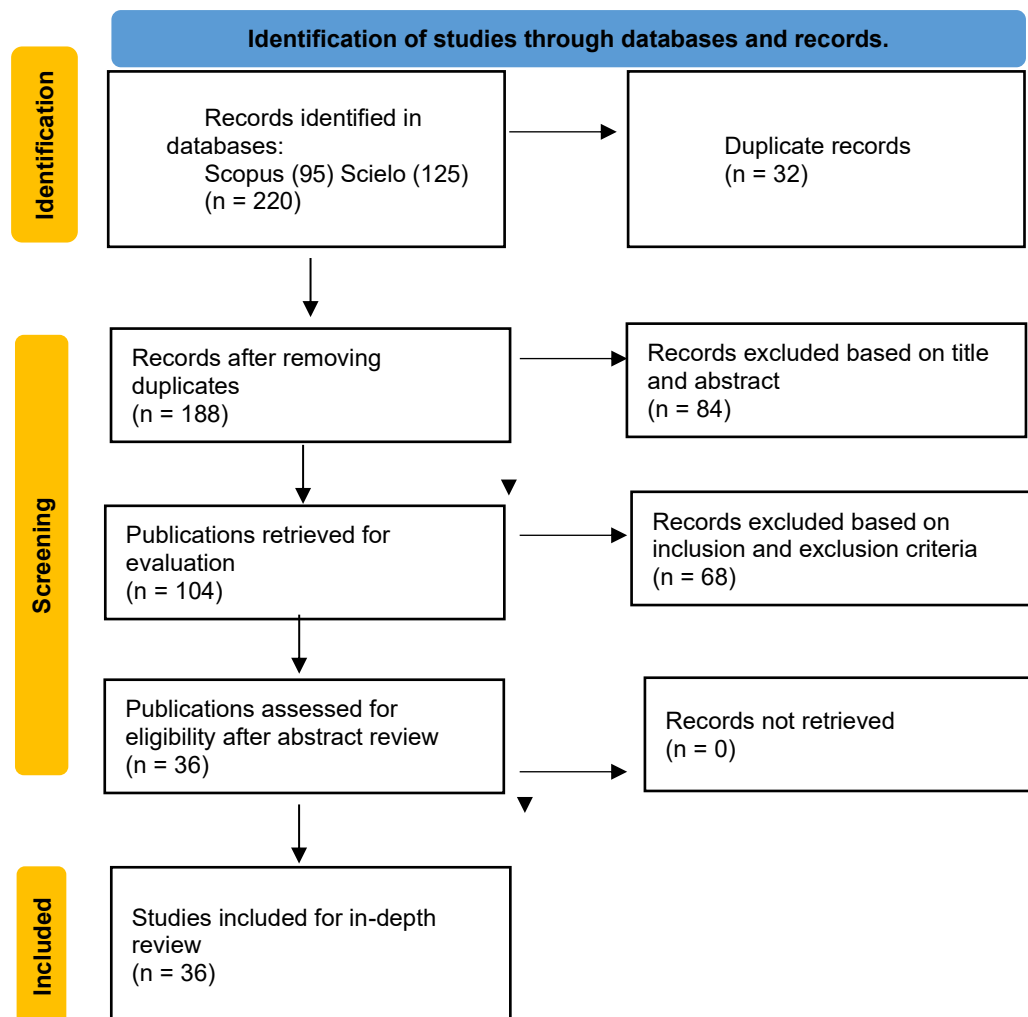
METHOD

This study employed a systematic literature review (SLR) approach to analyze the impact of university teachers' digital competence on the quality of higher education. This methodology is appropriate for integrating and critically synthesizing accumulated knowledge on a specific topic in a rigorous and reproducible manner, allowing for the identification of key trends, theoretical gaps, and future research directions.

The search process followed established methodological guidelines to ensure transparency and replicability. Two well-regarded academic databases—Scopus and SciELO—were selected due to their thematic breadth and scholarly credibility. Boolean operators (AND, OR) were applied to combine key terms in both English and Spanish related to the study variables, such as “competencia digital docente,” “calidad de la educación superior,” “educación universitaria,” “digital teaching competence,” “higher education quality,” and “educational technology.” The following search strings were used: “competencia digital docente” AND “calidad educativa” AND “educación superior”; “digital teaching competence” AND “quality in higher education”; “educational technology” AND (“university teaching” OR “higher education”); and “teaching competence” AND (“ICT” OR “digital skills”) AND “education quality.” Initially, no time constraints were applied to maximize coverage. However, during refinement, only studies published between 2020 and 2025 were included, as this timeframe reflects the most relevant period in the context of educational digital transformation during and after the COVID-19 pandemic. The initial search yielded 220 articles. After removing 32 duplicates, 188 unique records remained. Titles and abstracts were screened using predefined inclusion and exclusion criteria, narrowing the selection to 36 articles for full-text analysis. A second review based on thematic alignment, methodological rigor, and full-text accessibility confirmed the final inclusion of these 36 publications, as detailed in the diagram (see Figure 1). Inclusion criteria: studies published between 2020–2025; articles with quantitative, qualitative, mixed, or review methodologies; and those explicitly addressing the digital competence of university faculty in relation to higher education quality. Exclusion criteria: book chapters, editorials, conference abstracts, non-peer-reviewed materials, and studies unrelated to the university level or lacking empirical or theoretical contributions. A collaborative database was created to organize the selected records, and a data extraction matrix was developed to systematize information such as authorship, country, methodological approach, variables studied, key findings, and conclusions. This structure enabled the development of a comparative and integrative discussion, offering a

critical synthesis of the state of knowledge on digital teaching competence as a crucial factor in enhancing the quality of higher education.

Figure 1 Flow diagram of the selection process for scientific articles.



After applying the criteria, 36 full-text publications were selected for systematic analysis, as shown in Table 1.

Table 1 Characteristics of the scientific articles reviewed.

Nº	Author	Title of the scientific article	Methodology	Country	Year	Databas e
1	Räsänen et al. (2021)	Digital competencies of teaching professionals: Distribution, relationships, and contextual factors based on large-scale assessments	Quantitative	Europe	2021	Scopus
2	Smestad, Eilertsen, & Gillespie (2023)	Teachers' digital competence: A review of research and perspectives during COVID-19	Systematic review	International	2023	Scopus
3	Mora-Cantalops et al. (2022)	Digital competencies of university faculty in Spain: A study based on the European frameworks DigCompEdu and OpenEdu	Quantitative	Spain	2023	Scopus

4	Zhao, Llorente, & Sánchez (2021)	Digital competence in higher education: A systematic review from the last seven years	Systematic review	International	2021	Scopus
5	Serrano et al. (2022)	Digital competence in special and mainstream education teachers: A comparative study	Quantitative	Spain	2022	Scopus
6	Watty (2022)	Addressing aspects of quality in higher education: Drawing support from literature and methodology	Systematic review	International	2022	Scopus
7	Mazurek & Mielcová (2019)	On the relationship between selected socio-economic indicators and student performances in the PISA 2015 study	Mixed	Latin America	2019	Scopus
8	Hoekstra (2020)	Returns on education quality	Systematic review	International	2020	Scopus
9	Allam & Ahmad (2013)	Quality in higher education in Saudi Arabia: A perception from stakeholders	Quantitative	Saudi Arabia	2020	Scopus
10	Qureshi et al. (2021)	Digital Technologies in Education 4.0: Does it enhance the effectiveness of learning?	Mixed	International	2021	Scopus
11	Abbas (2020)	HEISQUAL: A modern approach to measuring service quality in higher education institutions	Mixed	Turkey	2020	Scopus
12	Pereda-Loyola & Durán-Llano (2023)	Teaching digital competence as a challenge in virtual learning environments	Quantitative	Venezuela	2023	Scielo
13	Arteaga & Osorio (2024)	Digital competence in education: A systematic review	Systematic review	Peru	2024	Scopus
14	Benavente-Vera et al. (2021)	Development of teachers' digital competencies through intervention programs 2020	Quantitative	Peru	2021	Scielo
15	Zárate, Gurieva, & Jiménez (2020)	The holistic practice of teachers' digital competencies: Diagnosis and foresight	Quantitative	Mexico	2019	Scielo
16	Banoy-Suarez & Montoya-Marín (2022)	Development of digital competencies in basic and secondary education teachers	Mixed	Colombia	2022	Scielo
17	Castiñeira, Lorenzo-Rial, & Pérez (2022)	Digital teaching competence for content creation: Pre-service teachers' self-perception	Quantitative	Spain	2022	Scielo
18	Gaona-Portal et al. (2024)	Digital competencies in higher education: A systematic review	Systematic review	Ecuador	2024	Scielo
19	Saavedra-Carrion (2023)	Digital competence and professional	Quantitative	Peru	2023	Scielo

		development in teachers from Ayacucho					
20	Paredes-Marín, Ramírez-Chumbe, & Ramírez-Chumbe (2024)	Digital competence and teaching performance in public educational institutions: A bibliometric study in Scopus	Mixed	Global	2024	Scielo	
21	Olaya, Contreras, & Salinas (2025)	Digital competencies in university teachers: A systematic review	Systematic review	Peru	2025	Scielo	
22	Flores-Banda et al. (2024)	Influence of digital teaching competence on learning in tele-high schools	Quantitative	Mexico	2024	Scielo	
23	Romero-Arévalo & Guerra-Castellanos (2024)	Digital skills in technical-productive education teachers	Quantitative	Peru	2024	Scielo	
24	Melgarejo, Puma, & Cadenillas (2024)	Digital competencies in university teachers: A systematic review	Systematic review	Peru	2024	Scielo	
25	Verdú-Pina et al. (2023)	The concept of digital teaching competence: Literature review	Systematic review	Spain	2023	Scielo	
26	Ruiz, Quiñonez, & Zapata (2023)	Challenges in the development of digital competence in secondary school teachers	Quantitative	Mexico	2023	Scielo	
27	Silva, Soto, & Trillo (2023)	Digital competencies in teachers: A situational study	Systematic review	Peru	2019	Scielo	
28	Kanobel, Galli, & Chan (2023)	Digital teaching competencies in higher education in Argentina	Quantitative	Argentina	2023	Scielo	
29	Condor et al. (2025)	Advances in quality in higher education	Systematic review	Peru	2025	Scielo	
30	Palomino-Hurtado, Oré-León, & Santos-Jiménez (2023)	Quality higher education as an alternative to economic and social inequality in Peru	Systematic review	Peru	2023	Scielo	
31	Pérez (2023)	Relevance, quality, and innovation in higher education	Systematic review	Costa Rica	2023	Scielo	
32	Méndez, Pesántez, & Zúñiga (2024)	Educational quality management: An approach from the right to education	Qualitative	Latin America	2024	Scielo	
33	Flores-Torres, Artola, & Tarifa (2024)	Dimensions and indicators for diagnosing university quality	Systematic review	Venezuela	2024	Scielo	
34	Rodríguez, Morales, & Gálvez (2022)	Educational quality in higher education during the COVID-19 pandemic	Systematic review	Peru	2022	Scielo	
35	Carbonell, Gutiérrez, Marín, & Rodríguez (2021)	Quality in higher education in Latin America: A systematic review	Systematic review	Latin America	2021	Scielo	
36	Aguilar, Reasco, & Coello (2024)	Educational inclusion in higher education:	Quantitative	Ecuador	2024	Scielo	

Challenges and
perspectives in Ecuador

RESULTS AND DISCUSSION

The most relevant studies selected during the systematic literature review are presented below, in order to provide a comprehensive overview of the approaches, findings, and current trends in the development and use of digital competencies in the field of university education.

Table 2 Scientific articles related to digital competencies in university teachers

Authors	Objective of the Article	Findings of the Article	Conclusions of the Article
Räsänen et al. (2021)	Explore teachers' digital competencies through the analysis of international studies (PIAAC and TALIS).	11% of teachers have strong digital skills; 42% have weak skills; variations are observed by age, education level, and other factors.	There is significant variability in digital competencies; improvements are needed.
Smestad & Eilertsen (2023)	Analyze the conceptualization and characteristics of digital teaching competence before and during the COVID-19 pandemic.	A lack of clarity is found regarding the beneficiaries of digital competence, reliance on self-reported data, and a decline in the use of digital competence models.	There is an opportunity to deepen research on teachers' digital competence.
Mora-Cantallos et al. (2022)	Validate the DigCompEdu model in health sciences faculties at Spanish universities.	Teachers have basic digital competence; technological proficiency is greater than pedagogical proficiency; digital security is the weakest area.	There is a need to improve digital security and pedagogical training; non-random sampling limits generalizability.
Zhao & Llorente (2021)	Systematically review the definition, research, and validation of digital competence in higher education.	Evaluation of instruments such as the DigCompEdu Check-In and the impact of active methodologies.	There is a need for mixed-method research and studies focused on postgraduate programs and educators.
Serrano et al. (2022)	Compare the digital competence of teachers in special and mainstream education.	Differences in competence levels and ICT use between special education and mainstream teachers.	Training in digital competence is important to promote inclusive education.
Pereda & Durán (2023)	Determine the level of knowledge and digital competencies among basic education teachers, and assess improvement through virtual environments.	Before the intervention, 77% were at a deficient level and 23% at regular; after the intervention, 60% reached very good, 27% good, and 13% remained deficient.	There was a significant improvement in digital competencies following the implementation of virtual environments.
Arteaga & Osorio (2024)	Analyze digital competencies in post-pandemic university education through a review of Scopus-indexed articles (2020–2024).	High self-perception of digital competence among Peruvian university professors, especially in assessment and electronic administration.	Progress has been made in digital competencies, but practice and access to technological infrastructure still need reinforcement.
Benavente et al. (2021)	Demonstrate the effectiveness of a teacher digital competence intervention program and promote continuous training.	The intervention program led to growth in digital competencies across various dimensions.	The intervention was effective; teacher training should be both theoretical and practical to solve pedagogical challenges.
Zárate et al. (2020)	Design, present, and validate an instrument to measure teachers' digital competencies within the PELAD framework.	The validated instrument enables the evaluation of digital competencies linked to educational processes.	The instrument is effective for measuring and strengthening digital competencies in educational practice.
Banoy & Montoya (2022)	Design a training proposal for digital competencies for rural teachers in basic and secondary education in Colombia.	Medium-low levels of digital competencies in selecting, creating, and managing virtual learning objects.	Specific training is needed to strengthen ICT capabilities and promote educational innovation in rural areas.
Castiñeira & Lorenzo (2022)	Present an instrument to assess self-perception and knowledge of digital competence in content	Medium-low levels in content creation digital competence, but a positive attitude toward	Training in digital content creation must be reinforced

	creation, and analyze attitudes toward ICT.	development; gender, age, and the mother's education level are influencing factors.	due to its didactic importance.
Gaona et al. (2024)	Conduct a systematic review on the development of digital competencies in higher education among teachers and students.	Teachers face a challenge in strengthening digital competencies in information searching, critical thinking, communication, innovation, and digital creativity.	It is necessary to strengthen digital skills, develop solid measurement instruments, and design pedagogical strategies to enhance competencies.
Saavedra (2023)	Determine the influence of digital competencies on the professional development of teachers at an educational institution in Ayacucho.	Digital competencies explain 51.2% of teachers' professional development, strengthening institutional identity and teamwork.	Digital competence positively impacts teacher professionalism and their engagement with the educational community.
Paredes et al. (2024)	Conduct a global bibliometric study of Scopus-indexed documents (2003–2023) on digital competence and teaching performance in public institutions.	Most scientific production is from social sciences (38%), computer science (17%), and arts and humanities (14%). A total of 294 documents were analyzed, 93% of which were scientific articles.	There is significant international scientific output in the social sciences on digital competencies and teaching performance, with growing interest and diverse approaches.
Olaya et al. (2025)	Analyze the impact, development, and importance of digital competencies in university professors in Peru through a literature review (2015–2022).	Analysis of 25 articles shows growth in digital competencies among teachers, which is key for teaching and student training in digital environments.	Digital competencies are essential for university teachers; there is an urgent need to promote training in these areas.
Flores-Banda et al. (2024)	Describe the relationship between digital teaching competence and the improvement of student learning in tele-high schools in Veracruz.	Teachers with high digital competence use more digital tools and create educational materials, correlating with higher student grades ($r = 0.893$).	Teachers' digital competence positively influences student learning in tele-high schools.
Romero & Guerra (2024)	Determine the influence of technological tools on the digital competencies of CETPRO teachers.	Most teachers possess digital competencies acquired through training or self-learning, enabling regular classroom functioning.	Teachers must continually prepare and update themselves in information technologies to improve learning.
Melgarejo et al. (2024)	Identify and analyze digital competencies in university teachers: digital technologies, scientific production, sustainability, standards, and training strategies.	There is low mastery of digital competencies; improving them could enhance the quality of university education.	Mastering digital competencies is essential to improve university teaching; urgent reinforcement of teacher training is needed.
Verdú et al. (2023)	Analyze definitions and dimensions of digital teaching competence in the scientific literature (2009–2019).	The didactic, curricular, and methodological dimension (D1) predominates, followed by the personal/professional dimension (D4) and digital resource management (D2).	Digital teaching competence (DTC) consists of multiple dimensions; incorporating all of them is crucial for teacher training in the digital era.
Ruiz et al. (2023)	Identify the level of digital competence among secondary school teachers and associated factors, using evaluation instruments.	Many teachers have low or medium levels; weaknesses include information searching and participation in forums/audio-visual editing.	It is necessary to create training programs in digital competencies for teachers and conduct broader, more qualitative studies.
Silva et al. (2023)	Identify and analyze the level of digital competencies in teachers.	Teachers perform well in information searching and browsing but poorly in digital security and content creation; optimal age range is 22–45 years.	There is a need to strengthen digital security and content creation; younger teachers show better digital competencies.
Kanobel et al. (2023)	Analyze the profile and self-perception of digital competencies among higher	Teachers excel in professional engagement and digital content areas but are weak in content	There are varied perceptions of digital competencies; areas such as content protection

education faculty in Argentina
after one year of the COVID-19
pandemic.

protection/management and
professional collaboration.

and professional
collaboration need
reinforcement.

Continuous training in digital teaching competencies

Continuous training in digital teaching competencies represents a fundamental pillar for addressing technological challenges in the educational field. According to Benavente-Vera et al. (2021), the implementation of intervention programs fosters significant progress in the development of digital competencies across various areas of teaching performance. Similarly, Castiñeira et al. (2022) observed that pre-service teachers exhibit a medium-low level in digital content creation, despite showing a positive attitude toward lifelong learning. In addition, Olaya et al. (2025) argued that strengthening digital university competencies requires sustained training strategies to consolidate pedagogical practices. Furthermore, Melgarejo Valverde et al. (2024) pointed out that the limited command of digital competencies among university instructors highlights the need to integrate continuous training programs that address both technical and methodological skills. Banoy-Suarez and Montoya-Marin (2022) also concluded that in rural settings, teachers show deficiencies in technological and pedagogical aspects, demanding training proposals tailored to their specific needs. Kanobel et al. (2023) emphasized that teachers' perceptions of their digital competencies vary significantly across areas such as content protection and management, implying the need for differentiated training actions.

The reviewed studies agree that continuous training should not be limited to the transmission of technical knowledge, but rather incorporate reflective and critical approaches. For instance, Benavente-Vera et al. (2021) showed that meaningful learning of digital tools is enhanced when training programs combine theory and practice. Additionally, Castiñeira et al. (2022) highlighted that personal variables such as age and gender influence self-perception of digital competence, suggesting the importance of personalized training processes. Along the same lines, Olaya Guerrero et al. (2025) warned that the increase in digital competencies among university educators demands interventions that link technological use with pedagogical innovation. Melgarejo et al. (2024) documented that the limitations found in the use of digital tools require training processes aligned with teachers' actual needs. As noted by Banoy-Suarez and Montoya-Marin (2022), training proposals should consider the sociotechnological conditions of the environment, particularly in rural areas where digital divides are deeper. Moreover, Kanobel et al. (2023) noted that competencies related to professional collaboration and data protection are critical areas that should be prioritized in teacher development programs.

The evidence suggests that the design of continuous training programs must aim at the integral development of digital competencies across diverse educational settings. Benavente-Vera et al. (2021) evidenced that improvements in digital competence are sustainable when teachers engage in systematically planned and evaluated intervention processes. According to Castiñeira et al. (2022), a positive attitude toward digital learning is a facilitating factor that can be enhanced through support and motivation strategies. Olaya et al. (2025) proposed that systematic and ongoing digital training not only improves teaching performance but also transforms educational practices. In the same vein, Melgarejo et al. (2024) argued that basic command of digital technologies should be expanded toward a pedagogical approach that integrates instructional innovation. Banoy-Suarez and Montoya-Marin (2022) stressed that any training strategy must consider the technological heterogeneity in rural schools. Furthermore, Kanobel et al. (2023) confirmed that teachers' perceptions of their digital competence directly affect their performance, making it essential to promote ongoing self-assessment in training programs.

The link between continuous training and digital teaching competencies reveals a structural need in contemporary educational systems. For example, Benavente-Vera et al. (2021) maintained that strengthening digital competencies improves pedagogical knowledge management in virtual environments. It has been identified by Castiñeira et al. (2022) that although there is a positive predisposition toward the use of technology, the lack of structured training limits its effective use. In this regard, Olaya et al. (2025) indicated that training programs that incorporate technological innovation have a positive impact on the quality of university teaching. Similarly, Melgarejo Valverde et al. (2024) demonstrated that a low level of digital competence compromises not only teaching performance but also educators' capacity to innovate pedagogically. Banoy-Suarez and Montoya-Marin (2022) highlighted that in rural settings, the lack of technological training exacerbates existing educational inequalities. Finally, Kanobel et al. (2023) concluded that the evolution of continuous training in digital competencies should follow a logic of ongoing professional development that addresses the new technological demands of education.

Impact of Digital Competence on Teaching

The impact of digital competence on teaching has garnered increasing attention in recent years, given its transformative role in educational processes. Pereda-Loyola and Durán-Llano (2023) demonstrated that improving teachers' digital skills through the use of virtual environments results in significant gains in students' academic performance. Similarly, Saavedra-Carrión (2023) found that the development of digital competencies among faculty members is positively associated with the strengthening of institutional identity and collaborative work. According to Flores-Banda et al. (2024), higher levels of digital competence in teachers are directly correlated with better student grades, particularly in remote high school settings. Additionally, Romero-Arévalo and Guerra-Castellanos (2024) documented that ongoing updates in information technologies contribute to more effective teaching in technical and vocational education. Conversely, Melgarejo et al. (2024) pointed out that a low level

of digital competence undermines the quality of university teaching, negatively affecting the learning process. In the same vein, Kanobel et al. (2023) emphasized that the variability in teachers' digital competencies reflects disparities in access to and effective use of technology, which differently impacts educational contexts.

In this regard, various studies concur that teachers' digital competence not only improves pedagogical practices but also enhances learning outcomes. For example, Pereda-Loyola and Durán-Llaro (2023) argued that implementing digital strategies increases teachers' competency levels, improving the quality of the teaching-learning experience. Saavedra-Carrión (2023) provided evidence showing that digitally proficient teachers exhibit higher levels of professional commitment and performance within their institutions. Likewise, Flores-Banda et al. (2024) established that the intensive use of digital tools by teachers results in more meaningful student learning. Moreover, Romero-Arévalo and Guerra-Castellanos (2024) highlighted that digital training enables teachers to deliver dynamic and adaptive classes, even in technical education contexts. Melgarejo et al. (2024) warned that a lack of technological proficiency hinders educational innovation in universities and limits the effective use of virtual learning environments. According to Kanobel et al. (2023), a teacher's digital profile is directly related to their ability to foster collaborative and critical environments in the classroom.

Based on the evidence analyzed, it is clear that digital competence reshapes pedagogical dynamics and contributes to the continuous improvement of educational quality. After implementing virtual environment-based strategies, Pereda-Loyola and Durán-Llaro (2023) reported a significant improvement in teachers' digital competencies. Similarly, Saavedra-Carrión (2023) stressed that proper training in digital skills supports the sustainability of educational projects. Flores-Banda et al. (2024) asserted that students' academic outcomes largely depend on their teachers' ability to integrate technologies effectively into daily practice. According to Romero-Arévalo and Guerra-Castellanos (2024), adequate access to and use of digital tools allows teachers to diversify teaching methodologies. Melgarejo et al. (2024) argued that updating digital competencies is essential to ensure relevant and contextualized learning processes. Furthermore, Kanobel et al. (2023) found that deficits in digital competencies contribute to a quality gap across different educational levels and modalities.

The discussion surrounding the impact of digital competence on teaching reveals the need to establish continuous training processes that ensure educational quality across various contexts. Pereda-Loyola and Durán-Llaro (2023) concluded that virtual environments act as catalysts for improving teachers' digital competencies, thereby raising teaching standards. In parallel, Saavedra-Carrión (2023) maintained that strengthening teachers' digital skills promotes more collaborative and resilient educational communities. Flores-Banda et al. (2024) noted that well-developed digital competence directly influences students' autonomous and critical learning. In turn, Romero-Arévalo and Guerra-Castellanos (2024) stated that teachers' continuous technological training increases the pedagogical relevance of educational programs. According to Melgarejo et al. (2024), digital training for university faculty must be closely linked to curricular innovation strategies. Finally, Zárate et al. (2020) emphasized that reliable diagnosis of digital competencies enables more effective educational interventions, thereby enhancing quality and equity in teaching processes.

Evaluation of Digital Competence in Teachers

The evaluation of teachers' digital competencies has become a strategic axis for ensuring educational quality in increasingly technologized environments. Zárate et al. (2020) developed and validated an instrument that, through a holistic approach, reliably measures the level of teachers' digital competence. According to Castiñeira et al. (2022), future teachers' self-perception regarding their ability to create digital content tends to be medium-low, highlighting the need for more rigorous diagnostic tools. Verdú-Pina et al. (2023) emphasized that the didactic, curricular, and methodological dimensions are most prevalent in definitions of digital competence, thus guiding the design of specific assessment systems. Gaona-Portal et al. (2024) noted that there is a lack of robust instruments for evaluating digital competencies in higher education, which limits the development of evidence-based pedagogical strategies. Bibliometric studies by Paredes-Marín et al. (2024) reveal thematic dispersion in the scientific literature on digital competence, calling for greater systematization in evaluation criteria. Furthermore, Ruiz et al. (2023) found that low levels of digital competence among secondary school teachers underscore the urgency of evaluation tools that can identify specific training needs.

The analysis of existing assessment tools reveals significant challenges regarding validity, reliability, and applicability across various educational contexts. Zárate et al. (2020) suggested that instruments incorporating level-based taxonomies yield more accurate results when assessing the development of digital skills. Castiñeira et al. (2022) argued that sociodemographic factors such as age and gender influence self-perception, thus implying the need to integrate adjustment variables in assessment instruments. According to Verdú-Pina et al. (2023), most definitions of digital competence omit basic technical skills and positive attitudes toward ICT, which limits the comprehensiveness of evaluations. Gaona-Portal et al. (2024) stated that strengthening digital competencies requires measurement tools that encompass skills such as information retrieval, critical thinking, and digital innovation. Similarly, Paredes-Marín et al. (2024) documented that current assessments tend to prioritize technological over pedagogical dimensions, a disparity that undermines the integrality of findings. Silva et al. (2023) reported that digital security and content creation are the areas where teachers perform worst in digital competence evaluations.

The current state of digital competence assessment among teachers reflects some initial progress, yet considerable methodological and conceptual challenges remain. As noted by Zárate et al. (2020), reliable measurement tools provide a solid foundation for evaluating teachers' digital performance. Castiñeira et al. (2022) highlighted that

while teachers generally display a positive attitude toward digital training, effective evaluation mechanisms to support such processes are lacking. Verdú-Pina et al. (2023) proposed that the inclusion of multiple dimensions in definitions of digital competence must translate into integrative and dynamic evaluation instruments. In turn, Gaona-Portal et al. (2024) asserted that strengthening digital competencies in higher education depends on tools that not only assess but also guide pedagogical improvement. Paredes-Marín et al. (2024) observed that the scientific literature reflects growing concern over the need to standardize evaluation criteria for teachers' digital skills. Meanwhile, Ruiz et al. (2023) concluded that, despite current efforts, assessments still exhibit methodological biases that hinder their practical utility.

Several studies show that digital competence among teachers varies widely across countries, with disparities linked to personal and contextual factors (Räsänen et al., 2021; Serrano et al., 2022). As Smestad et al. (2023) and Zhao et al. (2021) pointed out, methodological limitations—such as reliance on self-reported data and a lack of conceptual clarity—persist in many evaluations. Furthermore, Mora-Cantalops et al. (2022) argued that post-pandemic teacher training should strengthen inclusive and technology-integrated teaching. Collectively, these findings support the need for mixed-methods studies and more holistic approaches. The development of more sophisticated and adaptable evaluation tools is a widely acknowledged need in recent literature.

Zárate et al. (2020) maintained that rigorous instrument validation enables effective measurement of digital competencies, thus supporting informed decision-making in teacher training. Castiñeira et al. (2022) stressed that positive perceptions of ICT must be accompanied by objective assessments that guide skills development. Verdú-Pina et al. (2023) proposed that assessment instruments should encompass both technical skills and the values and attitudes associated with the ethical use of technology. Gaona-Portal et al. (2024) argued that the future of higher education demands robust evaluation tools that support the design of evidence-based pedagogical interventions. For Paredes-Marín et al. (2024), advancing research on digital competencies requires integrating assessment refinement as a core priority. Lastly, Silva et al. (2023) emphasized the need for more specific evaluations in areas such as digital security and content creation, due to their direct impact on teaching quality.

Use of Technologies for Educational Innovation

The use of digital technologies to promote educational innovation has become a transformative element in teaching practices across various academic levels. Arteaga and Osorio (2024) stated that the integration of ICT after the pandemic enhanced dynamism and creativity in the university teaching process. In a complementary way, Pereda-Loyola and Durán-Llaro (2023) found that virtual environments contribute to the development of essential digital skills, which help renew teaching methodologies. According to Flores-Banda et al. (2024), the intensive use of digital materials by teachers is associated with higher academic performance among students. Similarly, Romero-Arévalo and Guerra-Castellanos (2024) affirmed that continuous technological training is essential for designing innovative educational strategies, especially in technical training contexts. Melgarejo Valverde et al. (2024) emphasized that strengthening teachers' digital competencies directly supports the integration of emerging technologies as pedagogical resources.

The analysis of available evidence shows that educational innovation mediated by digital technologies involves more than mere access to tools; it also requires pedagogical mastery of their use. Arteaga and Osorio (2024) found that teachers who use technology critically are able to transform learning environments into more participatory spaces. In addition, Pereda-Loyola and Durán-Llaro (2023) highlighted that digital competence acquired through virtual platforms improves the effectiveness of distance learning. Flores-Banda et al. (2024) pointed out that designing and using interactive digital resources significantly enhances learning outcomes in remote high school programs. Furthermore, Romero-Arévalo and Guerra-Castellanos (2024) suggested that technical teachers who master ICT are better able to diversify their teaching strategies. Melgarejo Valverde et al. (2024) showed that the low level of technological appropriation in university teaching limits the innovative potential that new technologies could bring to higher education.

The adoption of digital technologies in educational processes requires teacher training policies that prioritize the development of competencies for innovation. As Arteaga and Osorio (2024) emphasized, it is essential to design training programs that link the use of ICT to the transformation of traditional teaching practices. According to Pereda-Loyola and Durán-Llaro (2023), experience gained in virtual environments facilitates the transition toward more flexible and inclusive pedagogical models. Flores-Banda et al. (2024) demonstrated that the ability to create and adapt digital content is key to ensuring autonomous and meaningful learning. Romero-Arévalo and Guerra-Castellanos (2024) stated that teachers who stay up to date with emerging technologies are better equipped to face the challenges of modern education. Meanwhile, Melgarejo Valverde et al. (2024) argued that strengthening digital competence must involve the strategic use of technologies to drive didactic innovation.

Taken together, the reviewed studies suggest that the use of technology in education should not be limited to an instrumental perspective but should serve as a driver for pedagogical transformation. According to Arteaga and Osorio (2024), educational innovation based on ICT depends on teachers' ability to critically integrate digital tools. Pereda-Loyola and Durán-Llaro (2023) confirmed that teacher digital competence, when strengthened through virtual experience, is a key factor for meaningful learning. Flores-Banda et al. (2024) showed that the creative use of digital resources increases student motivation and autonomy. Likewise, Romero-Arévalo and Guerra-Castellanos (2024) demonstrated that technological updates among teachers improve the pedagogical relevance of education in dynamic environments. Finally, Melgarejo Valverde et al. (2024) argued that

educational innovation relies on ongoing digital training, which enables teachers to adapt to the evolving demands of the academic landscape.

Table 3 Scientific articles related to the quality of higher education.

Authors	Objective of the Article	Findings of the Article	Conclusions of the Article
Watty (2022)	Contribute to the discussion on quality in higher education, inclusion, equity, and excellence; propose an evaluation framework.	It discusses perspectives on quality in higher education and highlights the need for emotional, cognitive, and skills-based measures.	An integral model is important to bridge the gap between access and excellence and to promote social, cultural, and economic development.
Mazurek & Mielcová (2019)	Analyze factors affecting academic achievement, education policies, and equity.	It focuses more on basic education than higher education.	Investment in education, public policies, and attention to social inequalities are essential.
Hoekstra (2020)	Analyze how education quality influences academic and labor outcomes.	It does not specifically address the quality of higher education.	Higher-quality schools have positive effects on academic and labor outcomes.
Allam & Ahmad (2013)	Identify quality factors in higher education in Saudi Arabia.	Key factors include institutional aspects, admissions, and curricular content.	There are gaps in the literature; stakeholders should focus on key factors to improve quality.
Abbas (2020)	Develop and validate an instrument to measure service quality in higher education institutions from the students' perspective.	Key aspects: safety, employment, teacher profile, curriculum, and infrastructure.	The instrument is valid and reliable for evaluating service quality in higher education institutions.
Qureshi et al. (2021)	Explore the need for digital technologies in education, their applications, challenges, and future prospects.	The integration of digital technologies improves educational quality but faces infrastructure and training challenges.	Digital technologies are essential for educational transformation; overcoming obstacles is key.
Palomino-Hurtado et al. (2023)	Analyze quality higher education as an alternative to economic and social inequality in Peru.	Growth in educational offerings has not guaranteed quality; there is a need to improve evaluation and accreditation, and to contribute to social development.	Strengthening evaluation and accreditation mechanisms is necessary to meet social demands and reduce inequalities.
Pérez (2023)	Reflect on relevance, educational quality, and innovation in higher education.	Relevance, quality, and innovation are fundamental, interdependent, and must be dynamically monitored.	These three elements are interdependent and must be addressed comprehensively for proper human and social development.
Méndez et al. (2024)	Analyze and promote the management of educational quality from the perspective of the right to education.	Quality should be based on institutional management and student satisfaction, not just on sequential processes.	Integrate quality standards into university management, promote research, and recognize quality as a meaningful outcome.
Flores-Torres et al. (2024)	Determine dimensions and indicators for diagnosing quality in universities.	Universities adopt international standards, continuous improvement, feedback, and active participation to ensure quality.	Ensure educational excellence and student satisfaction through continuous improvement aligned with international standards.
Rodriguez et al. (2022)	Explore educational quality in higher education during the COVID-19 pandemic.	Connectivity issues, technological management, and digital competencies affected educational quality in virtual learning.	Strengthen digital competencies and infrastructure to ensure quality in future similar contexts.
Carbonell et al. (2021)	Analyze research on evaluation and quality assurance in higher education in Latin America.	Diversification of tools and methodologies to evaluate quality; emphasis on virtual environments and internal/external accreditation.	The challenge of implementing evaluation mechanisms persists; it is important to strengthen quality management models.

Aguilar et al. (2024)	Analyze educational inclusion in higher education in Ecuador.	No specific results on quality are detailed; challenges and perceptions of educational inclusion are addressed.	It can be inferred that the conclusion emphasizes the importance of promoting inclusion, teacher training, and ensuring equal opportunities.
Condor et al. (2025)	Examine and analyze scientific production on quality in higher education, identifying research lines and challenges.	Achieving quality remains complex; policies, innovation, integrative teaching, and ongoing evaluation are required.	Ongoing effort, innovative policies, continuous evaluation, and integrative teaching methods are required.

The findings of this systematic review demonstrate broad theoretical and methodological convergence around the concept of educational quality in higher education. The contemporary literature reviewed reaffirms that quality cannot be conceived as a static or exclusively technical attribute, but rather as a dynamic, multidimensional, and adaptive process that involves pedagogical, institutional, technological, cultural, and normative factors (Watty, 2022; Condor et al., 2025; Abbas, 2020). This conceptualization—widely shared among the studies analyzed—emphasizes that improving quality in universities requires a systemic, sustained, and articulated approach, especially in contexts where structural gaps and inequality directly affect student access and retention.

One of the most solid consensuses identified is the need to implement holistic models of quality evaluation, in which student perceptions, teacher profiles, curriculum relevance, and physical and digital infrastructure, along with institutional capacity to respond to social and labor market challenges, converge (Abbas, 2020; Flores-Torres et al., 2024; Allam & Ahmad, 2013). From this perspective, quality transcends traditional accreditation standards or regulatory compliance, incorporating dimensions such as equity, inclusion, emotional well-being, and integral human development, as emphasized by Pérez López (2023), Qureshi et al. (2021), and Méndez et al. (2024).

In the Latin American context—particularly in countries such as Peru, Venezuela, Ecuador, and Bolivia—studies consistently highlight tensions between the quantitative expansion of educational offerings and the effective quality of formative processes (Palomino-Hurtado et al., 2023; Rodríguez et al., 2022; Aguilar et al., 2024; Carbonell et al., 2021). Palomino-Hurtado et al. (2023) show that, although access to higher education has significantly increased, this growth has not been accompanied by robust quality assurance policies, leading to deep disconnections between professional training and social and productive needs. This situation is compounded by the limited articulation between the educational system and the broader environment, preventing universities from becoming transformational agents of national development.

The findings also indicate that quality assurance policies often focus on administrative processes and formal accreditation, without sufficiently considering the student experience as the core of the educational process. This has been critically discussed by Carbonell et al. (2021), who argue that strengthening internal and external evaluation mechanisms must aim at improving university management and stakeholder satisfaction, particularly that of students. Similarly, Abbas (2020) notes that the development of valid and reliable instruments that integrate variables such as safety, employability, teacher profile, and service perception can help identify critical areas for strategic decision-making.

From a rights-based approach to education, Méndez et al. (2024) argue that achieving quality requires guaranteeing equitable access, cultural relevance, and educational justice, which implies transcending the technocratic vision of quality to conceive it as a human right in itself. This view aligns with the contributions of Aguilar et al. (2024), who examine the challenges of educational inclusion in higher education in Ecuador, highlighting the urgency of implementing structural reforms that ensure equal opportunities and eliminate the institutional, pedagogical, and social barriers faced by university students from historically marginalized groups. Moreover, the role of digital technologies in improving educational quality has become increasingly relevant, especially after the COVID-19 pandemic. Qureshi et al. (2021) and Rodríguez et al. (2022) agree that the forced virtualization of teaching exposed significant limitations in infrastructure, connectivity, digital skills, and institutional management. However, it also opened new possibilities to rethink pedagogical models from a more flexible, inclusive, and student-centered perspective. In this regard, digital transformation must not be viewed solely as a technological shift, but as an educational innovation process that requires specific teaching competencies, adequate infrastructure, and an institutional culture open to change.

At the international level, studies such as those by Hoekstra (2020) and Mazurek and Mielcová (2019) offer a comparative perspective linking educational quality with academic and labor outcomes, as well as with socioeconomic factors that influence student performance. These studies highlight that higher education institutions must not only focus on technical and professional training but also on generating critical human capital committed to social transformation. From this perspective, quality in higher education implies an expanded social responsibility that extends beyond the university campus to influence national and regional development dynamics.

Finally, it is important to note that, although multiple approaches and tools exist for evaluating quality, significant challenges remain in effectively implementing these methodologies—especially in contexts marked by high inequality and limited public investment in education (Carbonell et al., 2021; Watty, 2022). Therefore, advancing

toward quality higher education requires participatory educational governance, strong regulatory frameworks, inclusive policies, innovative pedagogical practices, integrated quality assurance systems, and a humanistic vision of educational development that positions students as the central protagonists of the learning process.

This review leads to the conclusion that it is imperative for public policies in higher education to explicitly incorporate the training of teachers in digital competencies as a strategic priority for the continuous improvement of educational quality. The lack of comprehensive regulations that align digital competency standards with accreditation processes, teacher evaluation, and pedagogical innovation limits the structural impact of training programs. Countries like Spain and Finland have made progress in designing frameworks such as DigCompEdu, which not only guide teacher training but also provide guidelines for institutional planning and evidence-based decision-making (Redecker, 2017). In Latin America, however, these efforts remain fragmented and uncoordinated, preventing systematic implementation. Therefore, it is essential that ministries of education, quality assurance agencies, and universities work together to establish regulatory frameworks that integrate digital competencies into teacher professional profiles, with verifiable indicators and continuous evaluation mechanisms. In this way, digital transformation in higher education would cease to be an aspirational goal and become an effective, sustained, and equitable policy.

CONCLUSIONS

The results of this systematic review support the conclusion that digital teaching competence is a structural and essential component for quality assurance in higher education, particularly in contexts of accelerated digital transformation. This study provides consolidated evidence showing that digital skills among university faculty significantly enhance pedagogical innovation, curriculum relevance, student academic performance, and educational inclusion.

Unlike previous studies that approach digital competence in a fragmented way, this research integrates methodological, theoretical, and contextual perspectives to propose a comprehensive model that links continuous training, pedagogical use of ICT, competency assessment, and institutional quality. Among its main contributions is the systematization of contemporary approaches to the assessment of digital competencies, as well as the identification of critical dimensions—such as content creation, digital security, and pedagogical management—that require targeted interventions.

Furthermore, this study contributes to the field by proposing that strengthening digital competencies should not be viewed as an isolated technical task, but as a structural strategy that directly influences curriculum transformation, faculty professionalization, and the consolidation of an institutional culture of sustainable and adaptive educational quality. The comparative analysis of national and international experiences also allows for the identification of gaps and opportunities that must be addressed through coordinated public policies, robust regulatory frameworks, and training practices aligned with university realities.

Lastly, future research is recommended to adopt mixed methodologies and longitudinal approaches to evaluate the sustained impact of digital competencies on student learning and faculty performance. It is also necessary to explore interrelationships with other structural factors such as university governance, digital equity, social inclusion, and institutional sustainability, incorporating interdisciplinary frameworks that enrich the understanding of the phenomenon and guide strategic decision-making in higher education.

REFERENCES

1. Abbas, J. (2020). HEISQUAL: A modern approach to measure service quality in higher education institutions. *Studies in Educational Evaluation*, 67, 100933. <https://doi.org/10.1016/j.stueduc.2020.100933>
2. Abimbola, B. O., Ekpudu, J. E., & Kuye, O. L. (2021). Contributions and theoretical approach to total quality management. *UNILAG Journal of Business*, 7(2). <https://ejournal.unilag.edu.ng/index.php/ujb/article/view/1395>
3. Aguilar, J. C., Reasco, B. C., & Coello, V. J. (2024). Educational inclusion in higher education: Challenges and perspectives in Ecuador. *Revista InveCom*, 4(2), e040206. <https://doi.org/10.5281/zenodo.10558676>
4. Al Faruq, M. S. S., Rozi, M. A. F., & Sunoko, A. (2023). Implementation of the Juran Trilogy in improving the quality of Islamic higher education. *Al-Hayat: Journal of Islamic Education*, 7(2), 668–680. <https://doi.org/10.35723/ajie.v8i1.420>
5. Alam, M. J., Ogawa, K., Basharat, L., & Ahsan, A. H. M. (2025). Significance of quality higher education in the advancement of gender equality: The case of Bangladesh. *Journal of Applied Research in Higher Education*, 17(1), 23–35. <https://doi.org/10.1108/JARHE-05-2023-0177>
6. Allam, Z., & Ahmad, N. (2013). Quality in higher education in Saudi Arabia: A perception from stakeholders. *SAGE Open*, 10(1), 1–8. <https://doi.org/10.1177/2158244019899057>
7. Arteaga, D., & Osorio, C. (2024). Digital competence in education: A systematic review. *Aula Virtual*, 5(12), e339. <https://doi.org/10.5281/zenodo.13227973>
8. Arellano, A. I., & Andrade, R. A. (2020). Digital competencies of university professors. *Journal Educational Innovation/Revista Innovación Educativa*, 20(83). <https://www.ipn.mx/assets/files/innovacion/docs/Innovacion-Educativa-83/competencias-digitales-docentes-de-profesores-universitarios.pdf>

9. Auris, D., Saavedra, P., Quispe, E. V., & Paucar, J. P. (2022). A look at higher education in Peru: Policy, quality, and teaching. *Revista Latinoamericana Ogmios*, 2(5), 489–505. <https://doi.org/10.53595/rlo.v2.i5.049>
10. Banoy-Suarez, W., & Montoya-Marín, E. A. (2022). Development of digital competencies in basic and secondary education teachers. *Revista Tecnológica-Educativa Docentes 2.0*, 15(1), 59–74. <https://doi.org/10.37843/rted.v15i1.306>
11. Barros, A., Bristow, A., & Prasad, A. (2024). Politicizing and humanizing management learning and education with Paulo Freire. *Management Learning*, 55(1). <https://doi.org/10.1177/13505076231221792>
12. Benavente-Vera, S., Flores, M., Guizado, F., & Núñez, L. (2021). Development of digital competencies in teachers through intervention programs 2020. *Propósitos y Representaciones*, 9(1), e1034. <https://doi.org/10.20511/pyr2021.v9n1.1034>
13. Camilleri, M. A. (2021). Evaluating service quality and performance of higher education institutions: A systematic review and a post-COVID-19 outlook. *International Journal of Quality and Service Sciences*, 13(2), 268–281. <https://doi.org/10.1108/IJQSS-03-2020-0034>
14. Carbonell, C. E., Gutiérrez, A. M., Marín, F. T., & Rodríguez, R. (2021). Quality in higher education in Latin America: A systematic review. *Revista Venezolana de Gerencia*, 26(6), 345–360. <https://doi.org/10.52080/rvgluz.26.e6.21>
15. Cardoza, M. A., Montenegro, L., Collazos, M. A., García, V. A., Bellido, O., & Turriate Chávez, J. J. (2023). Development of research competences in university professors: A bibliographic review. *International Journal of Membrane Science and Technology*, 10(3), 1750–1755. https://www.researchgate.net/profile/Manuel-Sernaque/publication/373648027_Development_of_Research_Competences_in_University_Professors_A_Bibliographic_Review/links/64f63b994c70687b8ed0ff93/Development-of-Research-Competences-in-University-Professors-A-Bibliographic-Review.pdf
16. Castiñeira, N., Lorenzo-Rial, M.-A., & Pérez Rodríguez, U. (2022). Teacher digital competence for creating content: Self-perception of pre-service teachers. *Educ. Pesqui.*, 48, e243510. <https://doi.org/10.1590/S1678-4634202248243510>
17. Condor, B., Balta, G. del C., Ramos, A., Bello, V., & Párraga, A. (2025). Advances on quality in higher education. *Revista InveCom*, 5(1), e501023. <https://doi.org/10.5281/zenodo.10975501>
18. Dervenis, C., Fitsilis, P., & Iatrellis, O. (2022). A review of research on teacher competencies in higher education. *Quality Assurance in Education*, 30(2), 199–220. <https://doi.org/10.1108/QAE-08-2021-0126>
19. Flores-Banda, J. C., Huerta-Patraca, G. A., Solis-Peralta, F. M., & Hernández-Martínez, C. E. (2024). Influence of teacher digital competence on learning in tele-secondary education. *Revista Tecnológica-Educativa Docentes 2.0*, 17(2), 62–73. <https://doi.org/10.37843/rted.v17i2.525>
20. Flores-Torres, D. A., Artola-Pimentel, M. de L., & Tarifa-Lozano, L. (2024). Dimensions and indicators for diagnosing university quality. *Cienciamatria*, 10(19), 263–278. <https://doi.org/10.35381/cm.v10i19.1381>
21. Gaona-Portal, M., Bazán-Linares, M., Luna-Acuña, M., & Peralta-Roncal, L. (2024). Digital competencies in higher education: A systematic review. *Revista Científica UISRAEL*, 11(2), 13–30. <https://doi.org/10.35290/rcui.v11n2.2024.959>
22. Gerhardt, H. P. (2023). A contribution to Paulo Freire's theory and practice: The 'Cultural Extension Service/University of Recife (1962–64). In *Paulo Freire Centennial* (1st ed., p. 19). Routledge. <https://doi.org/10.4324/9781003413028>
23. Grados, J. H., Canales, C. A., Cuzcano, A. B., Mendoza, F., Leva, A., & Meza, J. R. (2023). Capabilities of Latin American educational systems for the application of digital tools such as the flipped classroom [Preprint]. *OSF Preprints*. https://osf.io/preprints/osf/q5zbx_v1
24. Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
25. Hoekstra, M. (2020). Returns to education quality. In *The Economics of Education* (pp. 65–73). <https://doi.org/10.1016/B978-0-12-815391-8.00005-7>
26. UNESCO International Institute for Higher Education in Latin America and the Caribbean. (2024). Launch of the report Transforming the digital landscape of higher education in Latin America and the Caribbean. <https://www.iesalc.unesco.org/es/articles/lanzamiento-del-reporte-transformar-el-panorama-digital-de-la-educacion-superior-en-america-latina-y>
27. UNESCO International Institute for Educational Planning. (2023). Digital technologies in educational planning: How can they help create more inclusive and quality educational systems? https://unesdoc.unesco.org/ark:/48223/pf0000387203_spa
28. Kanobel, M. C., Galli, M. G., & Chan, D. M. (2023). Teacher digital competencies in higher education in Argentina. *Cuadernos de Investigación Educativa*, 14(2), e207. <https://doi.org/10.18861/cied.2023.14.2.3402>
29. Matsieli, M., & Mutula, S. (2024). COVID-19 and digital transformation in higher education institutions: Towards inclusive and equitable access to quality education. *Education Sciences*, 14(8), 819. <https://doi.org/10.3390/educsci14080819>
30. Mazurek, J., & Mielcová, E. (2019). On the relationship between selected socio-economic indicators and student performances in the PISA 2015 study. *Economic*, 12(2). <https://doi.org/10.15240/tul/001/2019-2-002>

31. Melgarejo, J. A., Puma, J. E., & Cadenillas, V. (2024). Digital competencies in university teachers: A systematic review. *Revista InveCom*, 4(2), e040272. <https://doi.org/10.5281/zenodo.10783474>
32. Méndez, C. R., Pesántez, J. F., & Zúñiga, J. G. (2024). Educational quality management: An approach from the right to education. *Revista Científica*, 9(32), 407-426. <https://doi.org/10.29394/scientific.issn.2542-2987.2024.9.32.19.407-426>
33. Ministry of Education of Peru. (2021). Guide 1: Self-diagnosis of institutional capacities. Implementation of remote education in universities. <https://repositorio.minedu.gob.pe/handle/20.500.12799/7643>
34. Ministry of Education of Peru, Regional Directorate of Áncash. (2023). Government plan and digital transformation for the 2023–2025 period of the Ministry of Education. <https://repositorio.minedu.gob.pe/handle/20.500.12799/8779>
35. Mora-Cantalops, M., et al. (2022). Digital competencies of university faculty in Spain: A study based on the European frameworks DigCompEdu and OpenEdu. *Educación Médica*, 24, 100791. <https://doi.org/10.1016/j.edumed.2022.100791>
36. Olaya, J. C., Contreras, F., & Salinas, Á. F. B. (2025). Digital competencies in university teachers: A systematic review. *Revista InveCom*, 5(1), e501093. <https://doi.org/10.5281/zenodo.12659838>
37. Organisation for Economic Co-operation and Development (OECD). (2023). OECD Digital Education Outlook 2023: Towards an Effective Digital Education Ecosystem. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>
38. Palomino-Hurtado, R., Oré-León, A. J. A., & Santos-Jiménez, O. (2023). Quality higher education as an alternative to economic and social inequality in Peru. *Revista Interdisciplinaria de Arbitraje Koinonía*, 8(Supl. 1), 326-341. <https://doi.org/10.35381/rkv8i1.2795>
39. Paredes-Marín, R. V., Ramírez-Chumbe, I., & Ramírez-Chumbe, C. A. (2024). Digital competence and teaching performance in public educational institutions: Bibliometric study in Scopus. *Revista Científica UISRAEL*, 11(1), 31-48. <https://doi.org/10.35290/rcui.v11n1.2023.1066>
40. Pereda-Loyola, R., & Durán-Llano, K. (2023). Teaching digital competence as a challenge in virtual learning environments. *Revista Interdisciplinaria de Arbitraje Koinonía*, 8(Supl. 2), 467-484. <https://doi.org/10.35381/rkv8i2.2887>
41. Pérez, E. (2023). Relevance, Quality and Innovation in Higher Education. *InterSedes*, 24(49), 255-275. <https://doi.org/10.15517/isucr.v24i49.50180>
42. Pérez-Penup, L., & Romero, I. (2024). The research competencies of university professors: A literature review. *Journal of Multidisciplinary Studies in Human Rights & Science (JMSHRS)*, 6(2). <https://doi.org/10.5281/zenodo.11083664>
43. Qureshi, M. I., et al. (2021). Digital Technologies in Education 4.0. Does it Enhance the Effectiveness of Learning?. *International Journal of Interactive Mobile Technologies*, 15(4), 1-25. <https://doi.org/10.3991/ijim.v15i04.22737>
44. Räsänen, R., Hämäläinen, R., & others. (2021). Digital competencies of teaching professionals: Distribution, relationships, and contextual factors based on large-scale assessments. *Computers in Human Behavior*, 117, 106672. <https://doi.org/10.1016/j.chb.2020.106672>
45. Rodríguez, L. N. M., Morales, T. C., & Gálvez-Suárez, E. (2022). Educational quality in higher education during the COVID-19 pandemic. *Horizontes Revista de Investigación en Ciencias de la Educación*, 6(22), 101-107. <https://doi.org/10.33996/revistahorizontes.v6i22.318>
46. Romero-Arévalo, M., & Guerra-Castellanos, Y. B. (2024). Digital skills in teachers of technical productive education. *Revista Interdisciplinaria Arbitrada Koinonía*, 9(17), 358-373. <https://doi.org/10.35381/rkv9i17.3245>
47. Ruiz, E., Quiñonez, S. H., & Zapata, A. (2023). Challenges in developing digital competence in secondary school teachers. *Apertura*, 15(1), 122-137. <https://doi.org/10.32870/ap.v15n1.2272>
48. Saavedra-Carrión, N. (2023). Digital Competence and Professional Development in Teachers from Ayacucho. *Revista Tecnológica-Educativa Docentes 2.0*, 16(2), 281-288. <https://doi.org/10.37843/rtd.v16i2.415>
49. Serrano, L., et al. (2022). Digital competence in special and ordinary education teachers: Comparative study. *Digital Education Review*, (41), 290-299. <https://doi.org/10.1344/der.2022.41.290>
50. Silva, D. I. S. V., Soto, V. A. G., & Trillo, M. B. (2023). Digital competencies in teachers: A situational study. *Horizontes Revista de Investigación en Ciencias de la Educación*, 7(28), 881-89. <https://doi.org/10.33996/revistahorizontes.v7i28.561>
51. Sinwell, Luke. (2022). Teaching and Learning Paulo Freire: South Africa's Communities of Struggle. *Education as Change*, 26(1), 1-19. <https://doi.org/10.25159/1947-9417/9368>
53. Smestad, B., Eilertsen, T., & Gillespie, A. (2023). Teachers' digital competence: A review of research and perspectives during COVID-19. *Heliyon*, 9(e16677). <https://doi.org/10.1016/j.heliyon.2023.e16677>
54. Torres, G., & Hernández-Gress, N. (2021). Research professors' self-assessment of competencies. *Future Internet*, 13(2), 41. <https://doi.org/10.3390/fi13020041>
55. Verdú-Pina, M., Lázaro-Cantabrana, J. L., Grimalt-Álvaro, C., & Usart, M. (2023). The concept of teacher digital competence: Literature review. *Revista electrónica de investigación educativa*, 25. <https://doi.org/10.24320/redie.2023.25.e11.4586>

-
56. Wajdi, M. B. N., Arifin, S., Haris, A., & Hady, M. S. (2023). Integrating dialectics of quality trilogy for education development in Islamic boarding schools. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam*, 7(2), 351–363. <https://doi.org/10.33650/al-tanzim.v7i2.3820>
57. Watty, K. (2022). Addressing aspects of quality in higher education: Drawing support from literature and methodology. *Journal of Business Research*, 138, 275–286. <https://doi.org/10.1016/j.jbusres.2021.10.023>
58. Zárate, A., Gurieva, N., & Jiménez, V. (2020). The holistic practice of teacher digital competencies: Diagnosis and prospect. *Pensamiento Educativo*, 57(1), 1-16. <https://dx.doi.org/10.7764/pel.57.1.2020.10>
59. Zayachuk, Y. (2024). Ensuring quality higher education in Ukraine in times of war. *Journal of Adult and Continuing Education*, 31(1). <https://doi.org/10.1177/14779714241270254>
60. Zhao, Y., Llorente, A. M. P., & Sánchez Gómez, M. C. (2021). Digital competence in higher education: A systematic review from the last seven years. *Computers & Education*, 168, 104212. <https://doi.org/10.1016/j.compedu.2021.104212>