



## TEACHING COMPETENCY IN HIGHER EDUCATION IN THE DIGITAL AND ARTIFICIAL INTELLIGENCE ERA

### COMPETENCIA DOCENTE EN LA EDUCACIÓN SUPERIOR EN LA ERA DIGITAL Y DE LA INTELIGENCIA ARTIFICIAL

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#### ABSTRACT

There has been a persistent structural bias in favor of research over teaching, which has led to the marginalization of systematic development of teaching competency in higher education. At the same time, a digital transformation, advances in AI, and the growing diversity of students are changing the expectations of pedagogy, and lecturers are required to teach 21st century skills such as problem solving and teamwork. This systematic literature review based on PRISMA tracks research on lecturers' teaching competency to establish its conceptual meaning, demonstrate its importance in improving student accomplishment and analyze its affecting aspects. The results suggest that teaching competency is the outcome of the interaction of pedagogical professionalism, disciplinary expertise, and contextual adaptation. This review is useful for institutions to re-evaluate effective teaching criteria and to find opportunities to improve lecturers' competency for the new era.

#### Keywords:

Teaching competency, Higher education, Student achievement, Pedagogical professionalism.

#### RESUMEN

Existe un sesgo estructural persistente a favor de la investigación por encima de la docencia, lo que ha llevado a la marginación del desarrollo sistemático de la competencia docente en la educación superior. Al mismo tiempo, la transformación digital, los avances en inteligencia artificial y la creciente diversidad del estudiantado están modificando las expectativas pedagógicas, exigiéndose a los docentes la enseñanza de habilidades del siglo XXI, tales como la resolución de problemas y el trabajo en equipo. Esta revisión sistemática de la literatura, basada en la metodología PRISMA, rastrea las investigaciones sobre la competencia docente de los profesores con el fin de establecer su significado conceptual, demostrar su importancia en la mejora del rendimiento estudiantil y analizar los factores que la influyen. Los resultados sugieren que la competencia docente es el resultado de la interacción entre el profesionalismo pedagógico, la experiencia disciplinar y la adaptación contextual. Esta revisión es de utilidad para las instituciones a fin de reevaluar los criterios de enseñanza efectiva e identificar oportunidades para mejorar la competencia de los docentes en la nueva era

#### Palabras clave:

Competencia Docente, Educación Superior, Rendimiento Estudiantil, Profesionalismo Pedagógico.



## INTRODUCTION

Higher education is undergoing an unprecedented transformation driven by globalization, technological innovation, demographic changes, and the transition toward knowledge-based economies. Universities are no longer expected solely to generate scientific knowledge and prepare professionals for the labor market; they are increasingly recognized as institutions responsible for fostering innovation, sustainable development, social responsibility, and lifelong learning. This expanded mission has intensified demands for educational quality, positioning teaching as a strategic function alongside research and knowledge transfer. Consequently, improving teaching quality has become a global priority for governments, accreditation agencies, and higher education institutions seeking to respond effectively to the rapidly evolving needs of society.

Despite this growing emphasis on educational quality, the academic profession has historically been shaped by an institutional culture that privileges research productivity over teaching excellence. Throughout much of the twentieth century and continuing into the present, faculty recruitment, promotion, tenure, and institutional prestige have largely depended on scientific publications, research funding, citation impact, and disciplinary specialization. Comparatively less attention has been devoted to the systematic development of pedagogical expertise, instructional innovation, and professional teaching competencies. This imbalance has generated what many scholars describe as a structural bias that undervalues teaching within academic careers and organizational reward systems. As a result, universities have frequently assumed that possessing extensive disciplinary knowledge is sufficient for effective teaching, overlooking the complex pedagogical competencies required to facilitate meaningful learning.

This traditional perspective has become increasingly inadequate in contemporary higher education. The continuous expansion of university enrollment, growing cultural and linguistic diversity among students, widening access to tertiary education, and increasing internationalization have substantially transformed the educational landscape. University classrooms now comprise learners with diverse educational backgrounds, learning preferences, professional aspirations, and technological competencies. These changes require lecturers to adopt inclusive, flexible, and student-centered teaching approaches capable of responding to heterogeneous learning needs while maintaining high academic standards (Devlin & Samarawickrema, 2022). Consequently, effective teaching has evolved from the simple transmission of disciplinary knowledge into a multidimensional professional activity involving curriculum design, instructional planning,

assessment literacy, communication, mentoring, and continuous pedagogical adaptation.

Simultaneously, the digital transformation of higher education has profoundly reshaped teaching and learning processes. Digital platforms, learning management systems, virtual classrooms, blended learning environments, educational analytics, immersive technologies, and open educational resources have fundamentally changed how knowledge is produced, shared, and consumed. More recently, the rapid advancement of artificial intelligence (AI) has accelerated this transformation by introducing intelligent tutoring systems, automated assessment, adaptive learning environments, personalized feedback mechanisms, generative AI applications, and sophisticated educational decision-support tools. These innovations have expanded opportunities for improving learning outcomes while simultaneously increasing the complexity of university teaching.

Rather than reducing the importance of lecturers, technological innovation has reinforced their central role in designing meaningful learning experiences and critically mediating students' interactions with digital technologies. Contemporary lecturers are expected to integrate technological resources strategically, promote active learning, facilitate interdisciplinary collaboration, foster creativity, encourage critical thinking, and develop twenty-first-century competencies that extend well beyond disciplinary knowledge. International organizations, including UNESCO, have consistently emphasized that higher education should prepare graduates capable of addressing increasingly complex global challenges through innovation, collaboration, ethical reasoning, and sustainable decision-making. Achieving these educational objectives depends fundamentally on the competency of university lecturers to create learning environments that promote these capabilities.

Artificial intelligence represents perhaps the most disruptive technological development currently influencing higher education. AI technologies are rapidly transforming instructional design, content creation, research support, academic writing, assessment, and student learning. Nevertheless, their educational value depends largely on the ability of educators to integrate these tools responsibly and ethically into teaching practice. The growing availability of generative AI systems has intensified discussions regarding academic integrity, transparency, bias, data privacy, intellectual property, and the preservation of human judgment in educational decision-making. Consequently, teaching competency increasingly encompasses not only technological proficiency but also ethical responsibility,

critical digital literacy, and the capacity to evaluate the pedagogical implications of emerging technologies.

Recent scholarship has highlighted that artificial intelligence should not be understood as a substitute for academic expertise but rather as a complementary resource whose effectiveness depends upon responsible human supervision. Sattari-Ardabili & De Hoyos-Guevara (2026) argue that the integration of AI into scientific activity requires principles of transparency, accountability, ethical responsibility, and critical human oversight to ensure that technological advances contribute positively to knowledge generation. Although their discussion focuses primarily on scientific research, these principles are equally applicable to higher education teaching. Lecturers must therefore develop competencies that enable them not only to use AI effectively but also to critically evaluate its outputs, preserve academic integrity, protect ethical standards, and promote responsible technology use among students. In this sense, the emergence of AI reinforces rather than diminishes the importance of highly competent educators capable of balancing technological innovation with pedagogical quality and human-centered educational values.

These transformations have stimulated renewed scholarly interest in understanding what constitutes effective university teaching. Increasingly, teaching competency is recognized as a multidimensional construct that integrates disciplinary expertise, pedagogical knowledge, communication skills, instructional design, assessment literacy, digital competence, professional ethics, reflective practice, and contextual adaptability. Unlike earlier perspectives that viewed teaching primarily as the transmission of knowledge, contemporary conceptualizations emphasize the dynamic interaction of cognitive, behavioral, motivational, and contextual dimensions that enable lecturers to respond effectively to diverse educational environments. This evolution reflects a broader shift from content-centered instruction toward learner-centered education, where teaching quality depends on the lecturer's ability to facilitate meaningful learning experiences through continuous professional development and pedagogical innovation.

The growing recognition of teaching competency has been accompanied by important theoretical and empirical developments that have progressively expanded its conceptual boundaries. Contemporary research conceptualizes teaching competency as a multidimensional construct integrating knowledge, skills, attitudes, professional values, pedagogical expertise, and contextual adaptability. Rather than representing a fixed set of abilities, teaching competency is increasingly understood as a dynamic capacity that evolves through professional experience,

continuous learning, and adaptation to changing educational environments.

Within higher education, this perspective has shifted attention from disciplinary expertise alone toward a broader understanding of effective teaching that encompasses curriculum design, student-centered instruction, assessment practices, communication, reflective practice, and the integration of digital technologies. Consequently, teaching competency is now regarded as a key component of educational quality and academic professionalism, supporting lecturers in responding to increasingly diverse learning contexts and emerging pedagogical challenges.

Building on these perspectives, empirical research has expanded considerably during the last decade. Studies conducted across different educational systems consistently demonstrate that teaching competency positively influences multiple dimensions of educational quality, including student achievement, academic engagement, learning satisfaction, motivation, classroom interaction, and graduate competencies (Adams et al., 2023). Likewise, professional development programs focusing on pedagogical innovation, reflective practice, assessment literacy, and digital teaching have been associated with significant improvements in instructional effectiveness and student-centered learning environments. These findings have encouraged universities to reconsider traditional faculty development policies by recognizing teaching competency as a strategic institutional resource rather than merely an individual professional attribute.

At the same time, technological innovation has become one of the principal drivers reshaping competency frameworks. The expansion of online education, blended learning, digital assessment, learning analytics, and artificial intelligence has introduced entirely new competency requirements that extend beyond traditional pedagogical knowledge. Contemporary lecturers must demonstrate digital fluency, instructional flexibility, ethical technology use, data literacy, and the capacity to design learning experiences that effectively integrate technological resources while maintaining educational quality. Consequently, competency frameworks have progressively evolved from relatively stable models focused on classroom instruction toward adaptive systems capable of responding to rapidly changing educational ecosystems characterized by continuous technological innovation.

Despite these advances, the scientific literature remains fragmented across multiple conceptual, methodological, and contextual perspectives. Existing studies employ diverse definitions of teaching competency, propose different structural models, validate heterogeneous

measurement instruments, and examine distinct dimensions depending on disciplinary, institutional, national, or technological contexts. Some investigations emphasize pedagogical knowledge and instructional effectiveness, whereas others prioritize digital competence, intercultural teaching, reflective practice, professional identity, psychological characteristics, or institutional support mechanisms. This conceptual diversity has generated valuable insights but has simultaneously limited the development of an integrated understanding capable of informing educational policy, faculty development programs, and future research.

Another important limitation concerns the rapid evolution of artificial intelligence within higher education. Although recent studies increasingly acknowledge AI as a transformative force in university teaching, relatively few have systematically examined how this technological revolution redefines teaching competency itself. Most investigations continue to analyze isolated dimensions of competency without considering the broader implications of intelligent technologies for instructional design, ethical decision-making, professional identity, and educational leadership. As Sattari-Ardabili & De Hoyos-Guevara (2026) emphasize, technological innovation must always be accompanied by ethical responsibility, transparency, accountability, and critical human judgment. Extending this perspective to higher education suggests that future competency frameworks should integrate ethical AI literacy alongside pedagogical, disciplinary, and digital competencies, thereby preparing lecturers to navigate increasingly complex educational environments responsibly and effectively.

Furthermore, considerable differences remain regarding the institutional, contextual, and individual factors influencing teaching competency development. Variables such as organizational support, professional development opportunities, leadership, institutional culture, digital infrastructure, collaborative learning communities, teaching self-efficacy, reflective practice, and technological readiness have all been identified as relevant predictors. However, evidence remains dispersed across isolated empirical studies, making it difficult to establish comprehensive theoretical explanations or identify consistent patterns capable of informing institutional strategies. Consequently, higher education institutions often lack robust evidence to guide the design of competency-based faculty development initiatives that respond effectively to contemporary educational challenges.

Given these circumstances, a comprehensive synthesis of the existing literature has become both timely and necessary. Systematic literature reviews provide an evidence-based methodology for consolidating dispersed

knowledge, critically evaluating theoretical and empirical developments, identifying methodological trends, revealing unresolved research gaps, and establishing coherent conceptual frameworks that support future investigations. Such synthesis is particularly relevant during a period characterized by accelerated digital transformation, increasing internationalization, expanding educational diversity, and the widespread integration of artificial intelligence into higher education. Bringing together evidence from different educational contexts enables a broader understanding of teaching competency as a multidimensional, dynamic, and context-dependent construct capable of responding to current and emerging educational demands.

Accordingly, the objective of this study is to systematically review the scientific literature on teaching competency in higher education to synthesize its conceptual foundations, examine its contribution to educational quality and student achievement, analyze the institutional, technological, contextual, and individual factors influencing its development, and identify emerging trends and future research directions within the context of digital transformation and artificial intelligence. By integrating theoretical perspectives and empirical evidence from diverse educational contexts, this review seeks to provide a comprehensive framework that supports faculty professional development, informs institutional decision-making, and contributes to the advancement of teaching quality in contemporary higher education.

## MATERIALS AND METHODS

This study employed a systematic literature review (SLR) to synthesize and critically evaluate the current evidence on teaching competency in higher education. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure transparency, reproducibility, and methodological rigor throughout the identification, screening, eligibility assessment, and selection of studies (Page et al., 2021).

The literature search was conducted in the Scopus and Web of Science (WoS) Core Collection databases, selected because of their comprehensive coverage of high-quality peer-reviewed research in education and the social sciences. An iterative search strategy was developed using Boolean operators and truncation symbols to maximize the retrieval of relevant studies. The final search equation combined terms related to university teachers, teaching competency, and higher education as follows: ("teacher" OR "lecturer" OR "professor" OR "faculty" OR "teach") AND ("teaching competency" OR "teaching competence" OR "teaching competenc\*") AND ("university"

OR “college” OR “academy” OR “higher vocational” OR “higher education”). Searches were restricted to titles, abstracts, and author keywords, and only peer-reviewed journal articles published in English between 2016 and 2026 were considered.

Eligible studies included empirical and theoretical journal articles that specifically addressed teaching competency in higher education and were indexed in either Scopus or Web of Science. Duplicate records, conference proceedings, book chapters, editorials, dissertations, publications without full-text access, and studies unrelated to the review topic were excluded.

All retrieved records were exported to a reference management software, where duplicate publications were identified and removed. The remaining studies were screened independently based on titles and abstracts, followed by a full-text assessment according to the predefined eligibility criteria. Disagreements during the screening process were resolved through discussion until consensus was reached. Following this process, 20 studies met all eligibility criteria and were included in the final qualitative synthesis. The complete study selection procedure is presented in the PRISMA 2020 flow diagram (Figure 1).

A standardized data extraction protocol was subsequently applied to all eligible studies to ensure consistency throughout the review. Information extracted from each publication included the authors, year of publication, country, research design, study objectives, theoretical framework, methodological approach, dimensions of teaching competency, sample characteristics, and principal findings.

To enhance methodological rigor, all included studies were evaluated according to the predefined eligibility criteria, considering the clarity of the research objectives, methodological coherence, relevance to teaching competency in higher education, and completeness of the reported findings. Only studies meeting these quality requirements were retained for the final synthesis.

The extracted evidence was synthesized using qualitative thematic analysis. The selected studies were systematically compared to identify recurring concepts, theoretical perspectives, competency dimensions, influencing factors, methodological trends, and emerging research gaps. Similar findings were grouped into broader analytical themes, enabling the development of an integrated understanding of teaching competency in higher education and providing the basis for the thematic analysis presented in the Results section.

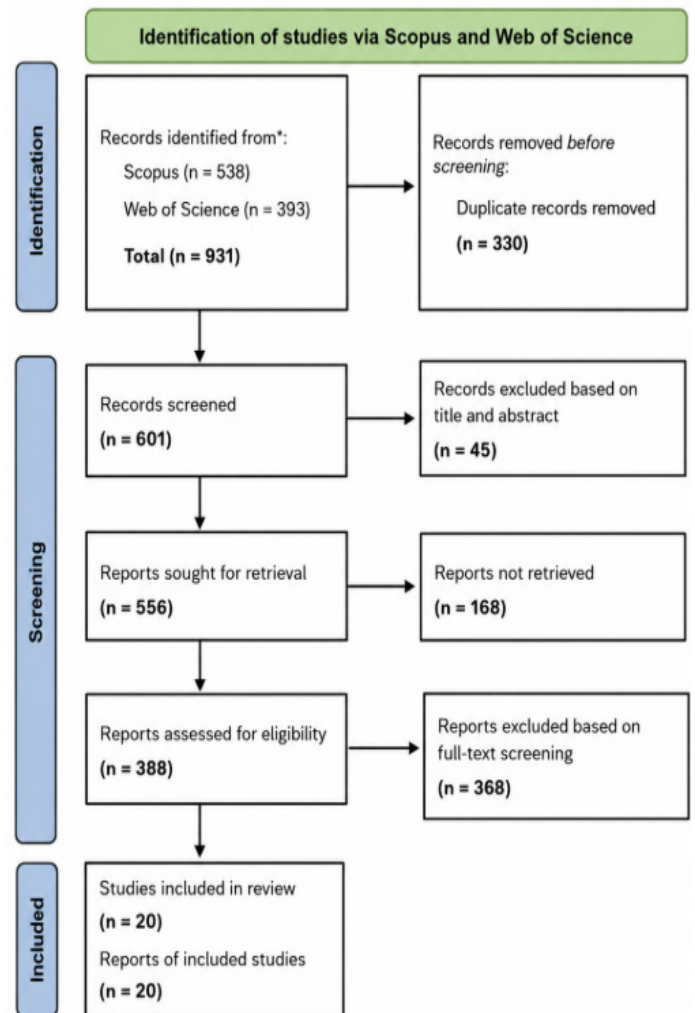


Figure 1. PRISMA flow diagram.

## RESULTS AND DISCUSSION

The literature evaluated (2017–2023) shows a more converging, but more complicated, understanding of teaching competency, progressing from fragmented descriptions of instructional skills to integrated, context-sensitive and dynamically developing competence systems. What is common to all research is the idea that teaching competency is a multifaceted construct that integrates knowledge, abilities, attitudes, values, personal attributes and behavioral expressions, and that is influenced at the same time by institutional and situational factors (Table 1).

Table 1. The definition of Teaching Competency in Higher Education.

Author (Year)	Definition of Teaching Competency	Key Elements
Swank et al. (2021)	Teaching competency refers to the knowledge, skills, and abilities required for educators to effectively facilitate learning and improve student outcomes.	Knowledge; skills; abilities; learning outcomes
Ramesh et al. (2019)	Teacher competency is the integration of knowledge, skills, attitudes, values, and personal characteristics, enabling teachers to act professionally and appropriately in context.	KSAs + values + personality; professional action; contextual application

The concept of teaching competency has evolved from relatively narrow interpretations centered on instructional performance toward broader and more comprehensive perspectives. Contemporary studies describe teaching competency as a multidimensional construct that integrates knowledge, skills, attitudes, professional values, and contextual adaptability, enabling lecturers to respond effectively to diverse educational environments and promote meaningful student learning. Rather than representing a fixed set of attributes, teaching competency is increasingly understood as a dynamic capability that develops through professional experience, continuous learning, and pedagogical innovation.

Existing research also highlights that teaching competency extends beyond disciplinary expertise to include instructional planning, classroom management, communication, assessment practices, student engagement, and reflective teaching. In this regard, competency is viewed as the effective integration of cognitive, behavioral, and professional dimensions that support high-quality teaching and improve educational outcomes (Ramesh et al., 2019; Swank et al., 2021).

Recent studies further indicate that the concept has expanded in response to digital transformation and changing educational contexts. The growing adoption of online, blended, and technology-enhanced learning environments has reinforced the need for lecturers to develop competencies related to instructional innovation, digital pedagogy, and continuous professional development. Consequently, teaching competency is now recognized as a flexible and context-dependent construct that evolves alongside technological, institutional, and societal changes.

Building on these perspectives, teaching competency can be defined as a multidimensional and context-sensitive construct that integrates pedagogical knowledge, disciplinary expertise, instructional skills, professional values, and adaptive capacities, enabling lecturers to design effective learning experiences, respond to diverse educational settings, and enhance student learning outcomes.

Research on teaching competency in higher education has primarily focused on conceptual development, competency frameworks, and measurement models. International studies have emphasized the importance of integrating instructional design, classroom management, student engagement, intercultural awareness, and academic professionalism into comprehensive competency frameworks (Dimitrov & Haque, 2016; Merkt, 2017; Swank et al., 2021). These approaches highlight that effective teaching depends not only on disciplinary expertise but also on lecturers' ability to adapt their pedagogical practices to diverse educational contexts.

Recent empirical evidence also indicates that competency frameworks have become increasingly responsive to technological innovation and institutional change. Research has shown a progressive transition from static descriptions of teaching competence toward dynamic models that recognize continuous professional development, educational innovation, and contextual adaptation as essential components of effective university teaching (Zhang et al., 2021). Overall, the literature demonstrates that teaching competency has evolved into a comprehensive framework for understanding and improving teaching quality in contemporary higher education.

One prominent line of research has focused on the development and validation of instruments for assessing teaching competency in higher education. International studies have made substantial progress in designing reliable and context-sensitive measurement tools that capture the multidimensional nature of teaching competency. Serrano et al. (2020) developed and validated context-specific measurement scales using exploratory and confirmatory factor analysis, providing evidence of the structural validity of competency dimensions within higher education. Similarly, Palacios-Picos et al. (2019) validated a discipline-specific instrument for physical education, demonstrating that competency assessment should consider the particular characteristics of different academic fields. Complementing these quantitative approaches, Danesh et al. (2021) employed qualitative methods to explore culturally embedded dimensions of teaching competency, highlighting the importance of contextual and cultural factors in understanding effective teaching practices. Likewise, Swank et al. (2021) developed and validated a comprehensive teaching competency

scale with strong psychometric properties, contributing to the availability of standardized instruments for competency assessment.

Recent empirical studies have increasingly adopted quantitative and mixed-method approaches to strengthen the validation of competency models across diverse higher education contexts. These methodological advances have improved the reliability, validity, and contextual relevance of teaching competency assessment, allowing researchers to move beyond conceptual discussions toward empirically supported measurement frameworks. As a result, the literature demonstrates a clear transition from theoretical model development to evidence-based validation, providing stronger foundations for faculty evaluation, professional development, and institutional quality improvement.

Since 2021, research on teaching competency has shifted from conceptual clarification toward the investigation of competency development mechanisms and technology integration strategies, reflecting the growing influence of digital transformation and artificial intelligence (AI) in higher education. This evolution illustrates a progressive transition from competency enhancement through professional development initiatives toward more comprehensive models that incorporate intelligent technologies, digital pedagogy, and context-responsive instructional practices.

From 2021 to 2023, the subject of study moved from defining teaching skill to exploring its effective development. There are many studies that have looked at the impact of organized professional development programs. Quasi-experimental evidence shows that systematic professional development programs significantly improve different aspects of teaching competency (Adams et al., 2023), while qualitative studies underline the importance of formative assessment and reflective learning for continuous professional growth. At the same time, advanced technologies began to emerge in this field, such as neural network-based assessment systems (Zhang et al., 2021; Zhang, & Zhang, 2021) and multimodal learning analytics methodologies (Xiong & Lai, 2024). However, these applications are still in an exploratory phase with limited validation of their reliability, validity and the standardization of evaluation instrument.

The 2024-2025 phase is a distinct AI-driven transformation. The paradigm of “Intelligent TPACK” with an emphasis on AI literacy, AI-enabled pedagogy, and AI-powered instructional design is developing in the teaching competencies (Ren & Wu, 2025). This change shows that technology has moved from a simple supplementary tool to a cognitive and pedagogical collaborator in teaching practice. The study scope has also grown to incorporate social and value dimensions with increasing focus on

equity, religious inclusivity and social justice (Mensah et al., 2025). This is part of a wider move away from the purely technical vision to a holistic framework that looks at the technological, ethical and social components.

Also, the rise of Global South scholarship has significantly broadened the epistemic variety of the topic. There is increasing research emerging from Africa, Latin America and Southeast Asia that is breaking away from the dominance of Western theory and producing context-specific competency frameworks contributing to a more varied and locally anchored understanding of teaching competency.

In terms of technology integration, the continuous digital transformation keeps reshaping the construct of instructional competency. Digital pedagogy, online course design, and technology-enhanced learning settings are highlighted as important abilities in international research. Meanwhile, Chinese scientists have proposed integrated models in the context of “5G + AI”, including knowledge updating, pedagogical innovation and evaluation enhancement. Additionally, competency frameworks have been expanded to include innovative pedagogical techniques such as entrepreneurship education and phenomenon-based learning, hence enhancing their scope and adaptability.

In summary, the 2021-2025 trajectory sets out a clear developmental trajectory from improving PD-oriented competencies, to the adoption of early-stage technologies, to AI-driven integration and multi-context expansion. This evolution is not just a diversification of methods, but also a fundamental reconfiguration of the teaching competency in more digitalized and intelligent educational ecosystems. Recently, more and more attention has been paid to the factors of teaching competency, which could be divided into institutional, societal and individual aspects. The macro system includes distal contextual elements such as educational policies, certification requirements, technology infrastructure, and sociocultural expectations. These factors are less often studied yet have structural and cascade effects on the development of teaching competency. For instance, the COVID-19 pandemic acted as a shock at the system level, speeding the reconfiguration of digital teaching competencies in higher education (Amoako & Anane, 2025). National teacher training policies have also been demonstrated to impact the design and implementation of institutional professional development (PD) programs (Ramesh et al., 2019). These findings point to a policy–institution–person “trickle-down” process, via which macro-level changes influence institutional resource allocation and subsequently individual prospects for development.

The most powerful predictor is the organizational structure, which includes PD programs, institutional support policies, ICT resources, and collegial cooperation culture (Adams et al., 2023; Shaikhova et al., 2024).

Empirical research has continuously underscored the efficacy of structured PD therapies. A quasi-experimental study at Ghent University (N = 189) found a five-day intensive PD program to significantly increase teaching ability in seven categories, with medium-to-large effect sizes (Cohen’s d > 0.5) (Adams et al., 2023). The use of confirmatory factor analysis (CFA) has further confirmed the stability of the competency structure, giving us strong methodological support. Beyond formal training, institutional support works through socially mediated mechanisms. Qualitative data suggests that the acquisition of competence of early-career teachers is highly anchored in collegial interaction and knowledge sharing in communities of practice (Shaikhova et al., 2024), which resonates with the theory of contextual learning. This shows that ability is not linearly accumulated but socially produced through involvement. At the same time, resource investment has a threshold effect. ICT availability is an essential requirement for technology integration but not sufficient. Empirical results show that differences in individual competency have a greater correlation with involvement in PD than the accessibility of resources (Rubeba, 2025), highlighting the relative importance of investment in human capital compared to material inputs.

Classroom characteristics include student variety, learner needs, teacher-student interactions, interaction patterns. The central mechanism might be conceived of as student feedback-driven instructional modification. A study based on structural equation modeling (N = 300) revealed that teacher-student interactions completely explain the association between teaching ability and student learning satisfaction ( $\beta = .67, p < .001$ ) (Parmod et al., 2024). This implies that instructional skill does not directly affect student results but rather that its effect is mediated by relational quality. Furthermore, the differences between instructor self-assessment and student perspective indicate a considerable “perception gap”. The cluster analysis found different profiles of perceived competence, with students rating teachers lower in technology integration, but higher in interpersonal dimensions (Medina Vásquez et al., 2025). This suggests the necessity of multi-source feedback systems in competence evaluation. Individual-level factors (51.4%) Teaching self-efficacy (TSE) Critical self-reflection (CSR) Demographic variables TSE has a major mediation role among them. Through PLS-SEM (N = 146), research reveals that TSE partially mediates the impact of critical self-reflection on intercultural teaching competency (indirect effect = .24,  $p < .01$ ) (Mensah et al., 2025).

Also, demographic characteristics are modifiers not direct predictors. The connection between digital competence and resilience is favorably moderated by age ( $\beta = .18, p < .05$ ). There is no significant effect of gender (Amoako & Anane, 2025). This finding challenges the idea of “digital native advantage” and implies that metacognitive and emotional regulation capacities associated to experience may support the development of adaptive expertise. The technological system is a cross-cutting and growing layer that comprises AI efficacy, digital literacy, social media use, and technology acceptability. A crucial result is that technology variables tend to work through only indirect channels. For example, the AI efficacy has no direct effect on the teaching competency but the whole mediating effect through social media engagement (indirect effect = .31,  $p < .001$ ) (Hania et al., 2025). This shows that technological skill is socially produced through membership in professional digital communities, not learned independently.

Moreover, digital resilience moderated the relationship between technology integration and the buffering effect of stress, accounting for additional variance in teaching competency ( $\Delta R^2 = .12, p < .01$ ) (Amoako & Anane, 2025). This highlights the relevance of psychological capital in technology-intensive settings. Table 2 presents the literature matrix for a systematic synthesis of previous studies.

Table 2: Systematic Synthesis of Teaching Competency Research in Higher Education.

Domain	Key Studies	Focus	Methodology	Key Insights
Conceptual Models	Swank et al. (2021);	Structure and dimensions of teaching competency	Delphi, scale development, mixed methods	Teaching competency is a multidimensional construct integrating roles, knowledge, and professional identity; Chinese models emphasize teaching–research integration
Measurement & Validation	Yuan et al. (2024)	Instrument development and validation	Factor analysis, Q methodology	Increasing methodological rigor; shift from conceptualization to empirical validation

Domain	Key Studies	Focus	Methodology	Key Insights
Technology Integration	Luo & Han (2024)	Digital and AI-related competencies	Empirical studies, case analysis	Teaching competency increasingly includes digital pedagogy and technology-enhanced instruction
Determinants (Institutional & Social)	Adams et al. (2023)	Training, organizational context, stakeholder relationships	Experimental, survey, regression	Institutional support and stakeholder alignment significantly influence competency development
Determinants (Individual & Psychological)	Ballová Mikušková et al. (2024)	Personality, motivation, cognition	Quantitative, correlational	Non-behavioral factors are critical predictors of teaching competency
Contextualized Chinese Research	Liu et al. (2024); Dai & Sihes (2023)	Discipline-specific and localized competency models	Mediation models, literature review	Emphasis on contextual adaptation, interdisciplinary demands, and emerging technologies

Research on teaching competency in higher education has advanced considerably, but there are still several big gaps that mirror both theoretical limits and empirical insufficiencies.

First, the present study is mostly descriptive in character, with limited engagement with critical policy analysis or discourse-oriented techniques. While macro-level issues such as educational laws, certification systems and societal expectations are generally acknowledged, they are rarely probed through analytical frameworks that interrogate their underlying power relations and discursive production. This limits the understanding of how policy environments actively shape the development of teaching competency (Amoako & Anane, 2025).

Second, there is a lack of study on the prediction of processes and causal paths. The majority of the research focuses on competency frameworks, dimensions and measurement instruments, however empirical research

Third, the theoretical foundation of the current competency frameworks is poor. Many models are built inductively and are not integrated with strong theoretical systems.

### CONCLUSIONS

In summary, the research progress on teaching competency in higher education has shifted from conceptual development to empirical validation to integrative and mechanism-oriented analysis, in both China and the world. International studies provide robust theoretical and methodological grounding, particularly in competency modeling, measurement formulation, and empirical testing (Adams et al., 2023). In contrast, Chinese scholarship provides essential contextual adaptations and policy-responsive insights, expanding the global understanding of faculty development. However, future research should move away from fragmented and descriptive methodologies and embrace theoretically grounded, multilevel and mechanism-based frameworks. In particular, Social Cognitive Theory offers a powerful framework for combining individual,

contextual, and behavioral drivers of teaching competency development.

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