

## Early Childhood Teacher Assessment and Competence: A Systematic Review Analysis

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### ABSTRACT

Competent early childhood education teachers play a critical role in fostering optimal child development aligned with developmental principles and learning needs. Despite extensive research on early childhood teacher competence, existing studies remain fragmented, and no systematic synthesis has comprehensively mapped the evolution, focus, and assessment of teacher competencies over an extended period. This study addresses this gap by conducting a systematic literature review (SLR) to examine research trends, dominant themes, and assessment approaches related to early childhood teacher competence. Using the Scopus database, publications were identified through the keywords *early childhood, education, teacher, competence, and assessment*. The review covered studies published between 1975 and 2025. Inclusion criteria comprised peer-reviewed journal articles published in English and explicitly focusing on early childhood teacher competence or assessment, while conference papers, book chapters, and studies unrelated to teacher competence were excluded. From 664 retrieved records, 460 articles met the eligibility criteria, and 15 core studies were selected for in-depth qualitative analysis. The findings reveal fluctuating publication trends over five decades and highlight four dominant themes: child development, teacher competence frameworks, teacher performance assessment, and professional preparation. The review identifies leadership, professional, social, and problem-solving competencies as consistently emphasized across studies, alongside the increasing role of structured training and professional development programs. This review contributes a consolidated framework of early childhood teacher competencies and assessment practices, offering a structured reference for future research, teacher education programs, and policy development in early childhood education.

### INTRODUCTION

Early childhood education (ECE) is internationally recognized as a critical foundation for lifelong cognitive, social, emotional, and physical development. The effectiveness of ECE systems largely depends on teacher competence, as educators play a central role in shaping developmentally appropriate learning environments. In the context of rapid social change, increasing diversity of learners, and rising expectations for educational accountability, the demand for competent early childhood teachers has intensified worldwide. Consequently, understanding how teacher competence has been conceptualized, assessed, and developed over time has become an urgent issue in early childhood education research and policy.

In many countries, the professionalization of early childhood educators is supported by national laws and institutional frameworks. For instance, Law No. 14 of 2005 in Indonesia explicitly outlines the professional role of teachers across all educational levels. According to

Article 1, Paragraph 1, teachers are responsible for educating, guiding, directing, training, and assessing students. These broad responsibilities highlight the need for high standards in teacher training and underscore the importance of upholding professionalism throughout an educator's career.

Existing studies consistently describe early childhood teacher competence as a multidimensional construct encompassing pedagogical knowledge, professional skills, attitudes, values, and ethical responsibility. Empirical evidence indicates that higher levels of teacher education and professional preparation are associated with more effective teaching practices and improved child development outcomes (Adams & Wolf, 2008). Conceptually, competence has been framed as an integrative process linking theoretical knowledge with contextual practice, reflecting the complex and evolving nature of teaching in early childhood settings (de Haro et al., 2020).

Teacher competence must be grounded in ethical, human, and vocational dimensions. These elements form the core of a teacher's professional identity and guide their daily interactions with children, families, and colleagues. Educators are not only responsible for transmitting knowledge but also for nurturing empathy, fairness, and respect in their students. A competent early childhood educator models values such as patience, inclusion, and integrity traits that are as important as academic knowledge.

Mangkunegara & Puspitasari (2015) argued that teacher challenges in the 21st century are inextricably linked to the perceived suboptimal quality of teacher professionalism. Therefore, comprehensive solutions must be implemented, encompassing all aspects, including qualifications and quality. Field data indicates that many early childhood education teachers have inappropriate educational backgrounds. The 2022-2023 early childhood statistics (Pusdatin, 2023) show that 61.49% of early childhood teachers have less than a bachelor's degree, while 38.51% have attained at least a bachelor's degree. Early childhood teachers who do not meet early childhood teachers qualification standards will have limited understanding of child development (Husain et al., 2022).

Despite the expanding body of literature, research on early childhood teacher competence and assessment remains fragmented and uneven. Many studies focus on specific dimensions of competence, single-country contexts, or short time periods, limiting the ability to identify long-term trends and conceptual shifts. Persistent concerns regarding inadequate qualifications and professionalism particularly in developing contexts (Mangkunegara & Puspitasari, 2015; Pusdatin, 2023) further highlight the need for a comprehensive synthesis. However, to date, no systematic review has mapped how research on early childhood teacher competence and assessment has evolved across multiple decades.

A systematic literature review spanning five decades is therefore necessary to capture longitudinal research patterns, shifts in theoretical perspectives, and changes in assessment approaches related to early childhood teacher competence. By synthesizing studies published between 1975 and 2025, this review provides a historical and analytical overview of dominant themes, emerging trends, and underexplored areas in the field. This contribution is expected to inform future research agendas, strengthen teacher education programs, and support evidence-based policy making in early childhood education.

Accordingly, this study addresses the following research questions: 1) What are the major publication trends in research on early childhood teacher competence and assessment from 1975 to 2025?; 2) How have the conceptualizations and dimensions of early childhood teacher competence evolved over time?; 3) What assessment approaches have been used to evaluate early childhood teacher competence across different periods and contexts?; 4) What research gaps and future directions can be identified from the existing literature?. By providing a systematic and longitudinal synthesis of the literature, this review offers a comprehensive evidence base to guide future research, teacher education, and policy development in early childhood education.

## METHODS

This study employed a Systematic Literature Review (SLR) approach to synthesize empirical and conceptual studies on early childhood teacher competence published between 1975 and 2025. The review process was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, ensuring transparency, replicability, and methodological rigor throughout the review process.

### a. Identification

The identification stage involved searching the Scopus and Web of Science databases using keywords related to *early childhood education*, *teacher competence*, and *assessment*. The inclusion criteria at this stage were:

- 1) studies focusing on early childhood teacher competencies, and
- 2) articles published between 1975 and 2025.

This process resulted in a total of 664 articles identified across both databases.

### b. Screening

During the screening stage, articles that did not meet the relevance criteria were excluded based on their titles and abstracts. Following the systematic review steps proposed by Siswanto (2010), this phase included refining the research questions, conducting a structured literature search, and selecting relevant studies. The guiding research question focused on identifying research trends and patterns in early childhood education, particularly concerning the competencies required of early childhood teachers. After screening, 529 articles remained for further assessment.

### c. Eligibility

In the eligibility stage, full-text articles were assessed to remove duplicates, non-English publications, and studies that did not directly address teacher competencies. After applying these criteria, 460 articles were deemed eligible for analysis.

### d. Included

Finally, based on strict inclusion and exclusion criteria, 15 articles were selected for in-depth qualitative synthesis. These studies explicitly examined essential competencies required of early childhood teachers and provided substantial empirical or conceptual contributions to the field. The detailed selection process is illustrated in Figure 1 (PRISMA flow diagram).

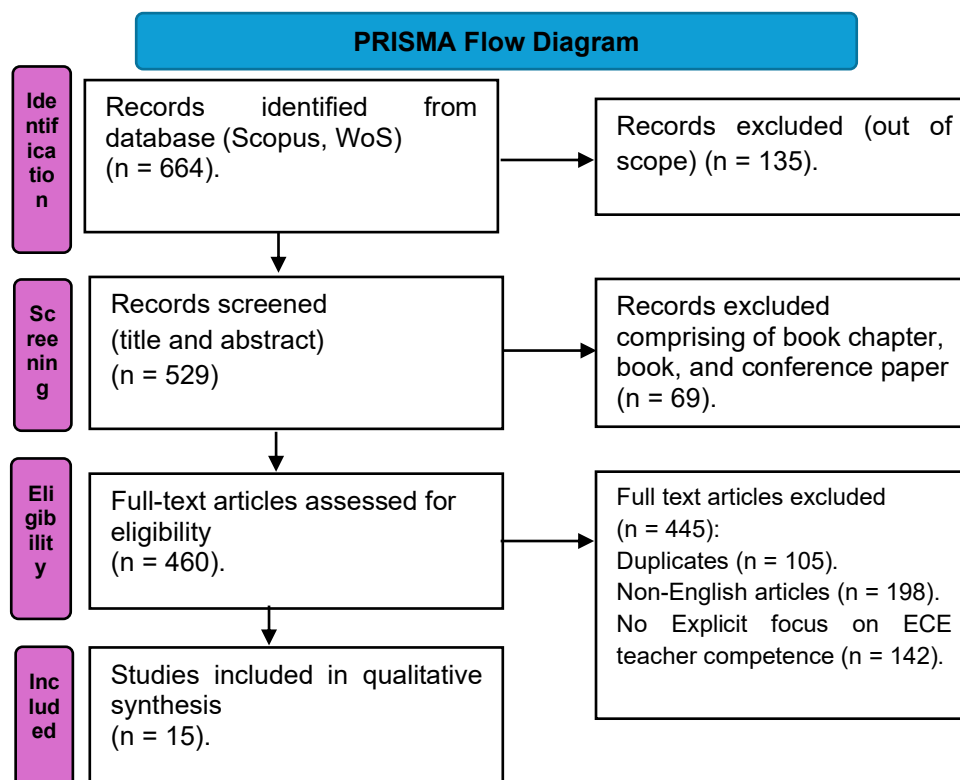


Figure 1. PRISMA Flow Diagram

Overall, the initial dataset of 664 articles from Scopus and Web of Science was systematically refined to identify influential authors, countries, and thematic trends. The final selection of 15 key studies provides a focused and robust foundation for understanding essential early childhood teacher competencies and their implications for teacher preparation, professional development, and educational practice.

## RESULT

Over the past five decades, research on early childhood education has shown a sustained and evolving focus on early childhood teacher competencies. Analysis of keyword frequencies reveals that pedagogical competence, digital competence, social-emotional competence, and professional competence are the most frequently discussed domains across the literature. These competencies consistently appear as foundational requirements for effective early childhood teaching, emphasizing teachers' roles in fostering responsive interactions, managing learning environments, and supporting holistic child development.



Figure 2. Keyword relationship cloud

A decade-based analysis indicates clear shifts in research emphasis. Prior to the 2000s, studies predominantly focused on basic teaching skills, classroom management, and content knowledge, reflecting a competence framework grounded in technical and instructional proficiency. From the early 2000s onward, research increasingly incorporated professional development, reflective practice, and perceived competence, signaling a move toward a more holistic and developmental understanding of teacher professionalism. Notably, after 2010, digital competence and technology-related skills emerged as prominent themes, corresponding with the integration of digital tools in early childhood settings and the growing expectation for teachers to adapt to technological and pedagogical innovation.

After using various stages according to PRISMA that have been explained in the methodology section, the author used 15 articles as the final results for analysis. These reviews answer the following questions: (1) What are the important competencies that early childhood teachers must have? here are the descriptions.

Table 1. Systematic Literature Review

Authors	Title	Early Childhood Teacher Competences	Quality
(Azarmandi et al., 2024)	Anti-racism commitment in early childhood education: The limits of cultural competency	understanding racism, racial literacy or critically addressing issues around race, anti-racist pedagogy to promote equity, cultural competence, collaboration with families and communities, critical reflection, and commitment to social justice are essential for educators	Eligible
(Marttila et al., 2024)	Enhancing early childhood education student teacher’s mentalization, interaction, and relationships: an online intervention	Understanding children's mental state, have sensitivity to children's socio-emotional and academic needs, interaction and relational competencies, reflective practice competencies to assess their own interactions with children in the classroom, and adapt to online learning environments	Eligible

(Kahila et al., 2024)	The significance of practicum work communities for students' professional development Perceptions of Finnish ECE teacher students.	Pedagogical competencies, which includes knowledge of children's learning processes and development. Teachers must be able to connect theory and practice, collaborate, engage in community for professional development, and reflect.	Eligible
(Heikkinen et al., 2024)	Leadership as a profession in early childhood education and care.	4 leadership competences: 1) systematic Professional Leader, 2) Contextual Leader related to the context and substance of early childhood education and care pedagogy. 3) lead teachers to implement learning according to the curriculum. 4) has a good character.	Eligible
(Visnjic & Rogulj, 2022)	Should we get support or just guidelines?" (self) assessment on mentoring of early childhood education students	Professional competence (teaching practice, planning learning for children and evaluation)	Eligible
(Nilfyr et al., 2022)	To conform or not to conform: An in-depth analysis of teacher–child interaction and the role of emotions in social adaptation in preschool.	Pedagogical competence to create emotional interactions that support and promote social attachment between teachers and children.	Eligible
(Licardo & Leite, 2022)	Ecological conditions and interpersonal skills leading to ECE teacher competences in working with immigrant children in Slovenia	Emotional an interpersonal competence :The ability to understand, regulate, and integrate emotions in everyday interactions, including with immigrant children and families.	Eligible
(Araújo & Antunes, 2021)	Assessment of workplace-based learning: key findings from an ECE professional master programme in Portugal	Pedagogical competence: observation, planning, action and reflection.	Eligible

(Ndlovu & Mncube, 2021)	Pre-service mathematics and physical education teachers' perceptions of using play-based teaching strategy across the foundation phase	Pedagogical competence : planning learning activities, identifying children's needs, and child development.	Eligible
(Dong & Mertala, 2021)	Preservice teachers' beliefs about young children's technology use at home. <i>Teaching and Teacher Education</i>	Technological mastery competencies, have expertise in parenting, and have good communication skills.	Eligible
(Casillas Martín et al., 2020)	Digital competence of early childhood education teachers: attitude, knowledge and use of ICT.	Digital competencies which include: knowledge of ICT, ability to use ICT devices and tools, using ICT in learning as part of the teaching and learning process.	Eligible
(Sunko et al., 2019)	Kindergarten teachers' competences regarding the inclusion of children with autism spectrum disorder in early childhood and preschool education institutions.	Identification students need, have communication skills to interact with children, collaboration skills with parents and other professionals, adapt to technology, conduct self-assessment and reflection on their competencies.	Eligible
(Fonsén & Ukkonen-Mikkola, 2019)	Early childhood education teachers' professional development towards pedagogical leadership	Pedagogical competence to conduct assessments and leadership competence.	Eligible
(Mascadri et al., 2017)	Exploring intercultural competence through the lens of self-authorship.	Intercultural competence : 1) Intrapersonal dimension to be aware of cultural identity, and develop self-confidence. 2) Interpersonal dimension, the ability to build cross-cultural relationships.	Eligible
(van der Veen et al., 2017)	The effect of productive classroom talk and	Pedagogical competence (knowledge, skills, and attitudes) and communicative (social) competence.	Eligible

metacommunication  
on young children's  
oral communicative  
competence and  
subject matter  
knowledge: An  
intervention study in  
early childhood  
education.

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Leadership competency in early childhood educators is a challenging, ethically and morally sensitive field, where leaders need to have personal involvement and understanding of pedagogical practices in order to be able to build leadership in multi-professional communities (Heikkinen et al., 2024). As early childhood education around the world continues to become more complex and culturally diverse, there is a need to better understand intercultural competence among early childhood educators. A professional learning focused on the calibration of educators intercultural knowledge, beliefs, and practices. Early childhood educators can fulfill the challenging responsibility of improving outcomes for culturally diverse children and ensuring respect for diversity in society's youngest citizens (Mascadri et al., 2017).

Leadership in early childhood education has become a widely discussed phenomenon in recent years because it influences the pedagogical structure of early childhood teachers (Lahtero and Kuusilehto-Awale 2015). Effective leadership in early childhood education is crucial for maintaining quality and supporting children's growth and learning (Gibson et al. 2020). Specifically, pedagogical leadership is crucial for ensuring high-quality early childhood programs (Fonsén et al. 2022). Teacher leadership is based on pedagogical expertise developed through early childhood development. Teacher pedagogical leadership can create opportunities to empower teachers' leadership potential and provide them with resources for professional development, through mentoring and modeling, to take on responsibility for overseeing and directing school programs.

Second, Professionalism. Professional development in early childhood education can be broadly defined as a systematic and planned effort aimed at ensuring that staff are good qualified to work effectively with children and their families (Ratib Lekhal et al., 2025). One of the elements that a professional teacher must possess is a broad and indepth mastery of learning materials, including mastery of curriculum materials in school subjects. Professionalism is essential for creating quality education. Carrying out work professionally requires specific knowledge, attitudes, and skills. Professional teachers can improve education, ensuring that the future of education in Indonesia is characterized by competent expertise in their respective fields (Dian Pertiwi et al., 2021). Furthermore, continuous professional development through targeted training programs can significantly enhance teachers' capacity to adapt to educational trends, technological advances, and evolving student needs.

Third, Social Comptencies. One of the teacher competencies is social competence. According to Huda (2018), social competence encompasses the ability to adapt to work

demands and the surrounding environment while carrying out their duties as teachers, as well as the ability to communicate effectively with students. Good communication skills contribute to an effective learning process. Recent research has shown a significant relationship between teachers social-emotional competence and students' academic emotions (Gimbert et al., 2021). Arenas et al. (2023) revealed that teachers demonstrating strong social emotional competence have an impact on high levels of student engagement in the classroom.

This emphasizes the importance of social emotional competence as a necessary aspect for students personal and psychological development. By developing their social-emotional competence, teachers create an interactive learning environment that further enhances student engagement. Teachers can build interactive learning environments to support student engagement. Socio emotional competencies significantly influence student engagement and improve learning outcomes. Therefore, education policymakers need to integrate teachers socio-emotional competencies into the curriculum to improve student engagement and learning outcomes.

Fourth, Problem solving competencies. Early childhood education teachers must have problem solving skills because they face challenging and changing situations in every day. Based on the research of (Kamola, 2024) explains that teacher interventions that effectively mediate problem solving activities, such as asking for questions, encourage children to develop more creative and effective strategies. Teachers who are competent in problem solving are not only able to efficiently address classroom challenges but also create a learning environment that supports the development of children's abilities. Teachers readiness to identify problems, develop pedagogical strategies, implement solutions, and evaluate them are essential skills for creating an effective learning process.

Fifth, trainings. Training can also improve the quality of PAUD teachers in following developing trends. Teacher training has great potential to improve the overall quality of early childhood education and is generally recognized as a direct way to ensure quality standards (Eadie et al, 2022) (Von Suchodoletz, 2023). According to a large study in the UK, the presence of trained teachers in early childhood programs has a significant impact on quality (Sylva, 2010). Structured and training programs are essential for teachers to support their competencies (Brunsek et al., 2020). These programs can take various formats, including in-school training (Egert et al., 2018). These programs typically include a variety of activities such as lectures, workshops, training materials, and mentoring (Brunsek et al., 2020). Training is most effective and beneficial when well-integrated into daily practice, emphasizing feedback, reflection, and coaching to drive changes in the learning process.

## **DISCUSSION**

Analysis consistently demonstrates that the quality of teacher and student interactions is a key predictor of children's cognitive, social, and emotional development (Slot, 2018). Global education has been committed to improving the quality of early childhood education by preparing qualified teachers. Over the past 50 years, research in early childhood education has increasingly focused on early childhood teacher education. These topics relate to teacher pedagogical competence, social competence, teacher training, teacher professional development, and digital competence. Developing teacher pedagogical competence is crucial

in equipping educators to be able to respond to children's needs in the learning process (Ratib Lekhal, et al.). It is crucial for teachers to have skills, confidence, and to continually learn new things and develop knowledge to support the learning process.

**RQ1. What are the major publication trends in research on early childhood teacher competence and assessment from 1975 to 2025?**

The reviewed studies indicate a clear intensification and diversification of research on early childhood teacher competence in the last two decades, particularly after 2010. While earlier research predominantly emphasized pedagogical competence related to classroom practice and child development (e.g., van der Veen et al., 2017; Araújo & Antunes, 2021), more recent publications demonstrate an expansion toward context-sensitive and socially responsive competencies.

From 2019 onward, there is a noticeable rise in studies addressing digital competence (Casillas Martín et al., 2020; Dong & Mertala, 2021), leadership competence (Fonsén & Ukkonen-Mikkola, 2019; Heikkinen et al., 2024), and equity-oriented competence, such as anti-racist and intercultural competence (Mascadri et al., 2017; Azarmandi et al., 2024). This shift reflects broader global trends in education responding to technological advancement, increasing diversity, and accountability pressures.

Overall, publication trends suggest a transition from skill-based instructional competence toward a holistic and multidimensional understanding of teacher professionalism, positioning early childhood teachers not only as educators but also as leaders, collaborators, and agents of social justice.

**RQ2. How have the conceptualizations and dimensions of early childhood teacher competence evolved over time?**

The conceptualization of early childhood teacher competence has evolved significantly, moving from a technical–pedagogical orientation to a dynamic, integrative, and relational framework. Earlier studies framed competence primarily in terms of teachers' ability to plan, implement, and evaluate learning activities (Araújo & Antunes, 2021; Ndlovu & Mncube, 2021). These competencies focused on observable instructional practices and developmental appropriateness.

More recent research, however, emphasizes relational, emotional, and reflective dimensions of competence. Studies by Nilfyr et al. (2022) and Licardo and Leite (2022) highlight emotional and interpersonal competence as central to supporting children's social adaptation, particularly in diverse and inclusive settings. Similarly, Marttila et al. (2024) introduce mentalization and reflective interaction competence, underscoring teachers' capacity to understand children's internal states and adapt pedagogical responses accordingly. In parallel, competence has increasingly been conceptualized as contextually embedded and ethically grounded. Azarmandi et al. (2024) extend the framework to include anti-racist pedagogy, racial literacy, and social justice commitment, signaling a shift toward critical and transformative perspectives. Leadership competence has also emerged as a distinct domain (Heikkinen et al., 2024), indicating that teacher competence now encompasses organizational influence, curriculum implementation, and professional character.

### **RQ3. What assessment approaches have been used to evaluate early childhood teacher competence across different periods and contexts?**

Competencies that are mandatory and important for early childhood teachers are very diverse. These competencies are influenced by educational policies in a country, the education system, the developing culture, and also the quality of a country. The higher the quality of a country, the more aware it will be that early childhood education is very important as a basis for laying various foundations. This awareness is what then drives the need for competent and qualified teachers. Teachers are the main actors in the progress of this nation's civilization. Teachers are the ones who are expected to be able to shape the personality, character, morality, and intellect of the young generation of this nation. Starting from the teacher, a student can get to know knowledge, values, morals, ethics, enthusiasm, and the outside world still seems foreign to him. The role and function of teachers are very strategic in making the implementation of education and learning a success. This strategic role cannot be replaced by anyone, indeed through the use of technology, the delivery of learning materials to students can be done, but only that, other roles of a teacher will not be replaced, especially the formation of moral, religious and independence values. SLR shows that it is important to prepare competent early childhood teachers before starting to teach in schools. These competencies include leadership, professional, social, and problem-solving. In addition, trainings can also improve the quality of early childhood teachers in following the developing trend.

The assessment of early childhood teacher competence has employed a variety of approaches, reflecting changes in conceptual understanding. Traditional assessment methods relied on performance-based evaluations, classroom observations, and practicum assessments (Araújo & Antunes, 2021; Kahila et al., 2024), focusing on the alignment between theory and practice.

Over time, there has been a growing use of self-assessment and reflective assessment tools, particularly in teacher education contexts. Visnjic Jevtic and Rogulj (2022) emphasize self-assessment in mentoring practices, while Marttila et al. (2024) incorporate reflective competencies to evaluate teachers' interactional sensitivity. These approaches recognize competence as an internalized and evolving construct rather than a static skill set. Additionally, context-specific assessments have emerged, such as evaluations of digital competence (Casillas Martín et al., 2020), inclusive competence for working with children with autism (Sunko et al., 2019), and intercultural competence (Mascadri et al., 2017). This diversity of assessment approaches reflects an increasing acknowledgment that no single method can capture the full complexity of early childhood teacher competence.

### **RQ4. What research gaps and future directions can be identified from the existing literature?**

Despite the richness of recent research, several gaps remain evident. First, while competence frameworks have expanded, empirical integration across competence domains is still limited. Most studies examine specific competencies such as digital, emotional, or

intercultural competence in isolation, rather than exploring how these dimensions interact within teachers' professional practice.

Second, there is a lack of longitudinal and cross-cultural comparative studies that trace how teacher competence develops over time and across diverse educational systems. Although some studies address specific national contexts (e.g., Finland, Slovenia, Portugal), comparative synthesis remains underdeveloped.

Third, assessment practices often rely heavily on self-reported measures, suggesting a need for mixed-method and multi-source assessment models that combine observation, reflection, and contextual analysis. Future research should also explore how emerging competencies such as adaptive, ethical, and leadership competence can be reliably assessed in both preservice and in-service teacher education.

Overall, future research would benefit from integrated competence models, longitudinal designs, and culturally responsive assessment frameworks that align with the evolving demands of early childhood education in a globalized and digitalized world.

In conclusion, this systematic literature review demonstrates that research on early childhood teacher competence has evolved from a narrow focus on pedagogical skills toward a multidimensional and context-responsive framework encompassing digital, emotional, intercultural, leadership, and ethical competencies. By synthesizing five decades of research, this study highlights significant shifts in conceptualization, assessment approaches, and professional expectations of early childhood educators. The findings underscore the need for integrated competence models and more robust, longitudinal, and culturally sensitive assessment strategies to support teacher development across diverse contexts. Ultimately, this review provides a comprehensive evidence base to inform future research, teacher education programs, and policy initiatives aimed at strengthening the professional competence of early childhood educators in response to the complex demands of contemporary education systems.

## CONCLUSION

This systematic literature review addresses the four research questions by synthesizing five decades of studies on early childhood teacher competence and assessment. First, the findings reveal a clear growth in publications over time, with increasing attention to teacher competence, particularly after 2000, reflecting global concerns about educational quality and accountability. Second, the conceptualization of early childhood teacher competence has evolved from a predominantly pedagogical focus to a multidimensional framework encompassing leadership, professional, social-emotional, problem-solving, and digital competencies. Third, assessment approaches have shifted from traditional observation-based and self-report measures toward more diverse and reflective methods, including performance assessment, mentoring-based evaluation, and competency frameworks aligned with professional standards. Finally, this review identifies persistent research gaps, including limited longitudinal studies, insufficient integration of ethical and contextual dimensions, and underrepresentation of developing-country contexts.

Overall, the findings confirm that improving early childhood education quality depends fundamentally on the preparation and continuous development of competent teachers. The five key competencies identified in this review provide an integrative framework that can

inform teacher education programs, professional development initiatives, and policy formulation. Strengthening these competencies is not only a professional imperative but also a strategic investment in ensuring holistic child development and sustainable educational outcomes.

### LIMITATIONS

Despite its contributions, this study has several limitations. First, the review was limited to articles indexed in Scopus and Web of Science, which may exclude relevant studies published in local or non-indexed journals. Second, although the review spans a 50-year period, only English-language publications were included, potentially limiting cultural and contextual diversity. Third, the synthesis focuses on thematic patterns rather than quantitative meta-analysis, which restricts causal inference regarding the impact of specific competencies. Future studies are encouraged to incorporate broader databases, multilingual sources, and mixed-method approaches to deepen understanding of early childhood teacher competence and assessment.

### DECLARATIONS

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