

Teacher Professional Development in Implementing Inclusive Education Practices

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ABSTRACT

This study aimed to examine teacher professional development approaches for implementing inclusive education practices, identifying barriers, facilitators, and effective models that support successful program implementation and sustainable classroom practice changes. A qualitative systematic literature review was conducted, analyzing peer-reviewed research published between 2015-2024 from major educational databases. The review employed thematic analysis to identify recurring patterns across studies examining professional development effectiveness in inclusive education contexts. Quality assessment criteria ensured inclusion of rigorous, relevant studies that contributed to evidence-based understanding of effective professional development practices. The analysis revealed three major themes: significant barriers including systemic resource constraints, negative teacher attitudes, and organizational culture challenges; key facilitators comprising strong leadership support, collaborative learning structures, high-quality content, and ongoing coaching; and effective models featuring collaborative consultation, professional learning communities, mentoring approaches, and technology-enhanced delivery methods. Findings indicated that successful professional development requires comprehensive, sustained approaches addressing multiple organizational levels simultaneously. Traditional one-time training events proved insufficient for promoting the complex changes required for inclusive education implementation. The most effective programs combined theoretical knowledge with practical application opportunities, peer collaboration, and ongoing support systems that honor adult learning principles while facilitating transformative changes in teacher beliefs and practices.

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1. Introduction

Inclusive education represents a fundamental paradigm shift in educational philosophy and practice, emphasizing the right of all students to receive quality education within mainstream settings regardless of their abilities, disabilities, or diverse characteristics (UNESCO, 2020). This approach moves beyond traditional models of segregated special education to create learning environments that accommodate the full spectrum of learner diversity. The implementation of inclusive education practices requires significant transformation in educational systems, pedagogical approaches, and most critically, in the professional competencies of educators who serve as the primary facilitators of inclusive learning experiences.

Teacher professional development has emerged as a cornerstone for successful inclusive education implementation, serving as the bridge between policy intentions and classroom realities (Sharma & Sokal, 2015). The complexity of inclusive education demands that teachers possess not only specialized knowledge about diverse learning needs but also the pedagogical skills to differentiate instruction, adapt curricula, and create supportive classroom environments for all students. Professional development programs must address multiple dimensions of teacher competency, including content knowledge, pedagogical skills, assessment strategies, and attitudinal changes toward diversity and inclusion (Forlin & Chambers, 2011).

Research consistently demonstrates that effective teacher preparation and ongoing professional development are critical determinants of inclusive education success (Avramidis & Norwich, 2002). Teachers who receive comprehensive training in inclusive practices demonstrate higher levels of self-efficacy, more positive attitudes toward inclusion, and greater competence in implementing evidence-based instructional strategies. Meta-analytical studies have shown that professional development opportunities can effectively improve teachers' learning processes and positively impact students' behavior in inclusive settings (Krammer et al., 2023). However, the quality, duration, and focus of professional development programs significantly influence their effectiveness in promoting sustainable changes in classroom practice.

The global movement toward inclusive education has gained momentum following international policy frameworks, including the Convention on the Rights of Persons with Disabilities and the Sustainable Development Goals, which emphasize education for all as a fundamental human right (United Nations, 2015). According to the U.S. Department of Education, in 2019, nearly 65% of students with disabilities received special education services in inclusive classrooms nationwide, marking a significant rise from 46.5% in 2000 (Illinois College of Education, 2024). This substantial increase in inclusive placements underscores the urgent need for comprehensive teacher preparation programs that equip educators with the necessary competencies to support diverse learners effectively.

Contemporary inclusive education practices require teachers to master complex pedagogical approaches, including Universal Design for Learning (UDL), differentiated instruction, collaborative teaching models, and evidence-based interventions for students with diverse needs (Rose & Meyer, 2002). Teachers must develop cultural competence to work effectively with students from various ethnic, linguistic, and socioeconomic backgrounds while simultaneously addressing the individual learning requirements of students with disabilities, giftedness, and other exceptional characteristics. This multifaceted skill set necessitates sustained professional development that goes beyond traditional one-time training sessions to include ongoing coaching, mentoring, and reflective practice opportunities.

The challenges facing inclusive education implementation are multidimensional and interconnected, ranging from systemic barriers to individual teacher preparedness issues. Many teachers did not have the benefit of being trained to teach learners who experience barriers to learning, hence most find it difficult to implement inclusive practices effectively (Mahlo, 2011). Insufficient pre-service preparation, limited resources, inadequate administrative support, and lack of collaborative structures within schools create significant obstacles to successful inclusion. Additionally, negative attitudes and misconceptions about disability and diversity can impede teachers' willingness to embrace inclusive practices,

highlighting the importance of addressing both cognitive and affective dimensions in professional development programs.

Teachers' belief systems about the inclusion of students with special needs may explain gaps between policy and practice, with research revealing contradictory findings about why teachers differ in their belief systems about inclusive education and how training experiences contribute to their development (de Boer et al., 2022). The complexity of these belief systems encompasses cognitive appraisals such as attitudes toward inclusion, emotional responses to diverse learners, and self-efficacy beliefs about one's ability to teach in inclusive settings. Professional development programs must address these multifaceted belief systems through comprehensive approaches that combine knowledge acquisition, skill development, and reflective practice to promote sustainable changes in teaching behavior.

Recent multi-country studies have identified eight persistent challenges in inclusive education, including inadequate teacher preparation, insufficient resources, negative attitudes, lack of administrative support, inappropriate assessment practices, limited collaboration, inadequate policy implementation, and insufficient family engagement (Chen et al., 2024). These challenges necessitate systematic approaches to professional development that address both individual teacher needs and broader systemic factors that influence inclusive education implementation. Effective professional development programs must be contextualized, sustained, and aligned with evidence-based practices to overcome these persistent barriers and promote meaningful change in educational outcomes for all students.

Research by Krammer et al. (2023) conducted a comprehensive meta-analysis examining the effectiveness of professional development programs in supporting inclusive education implementation. Their study analyzed multiple intervention studies to determine whether professional development opportunities effectively improve teachers' learning processes and positively impact student behavior in inclusive settings. The findings revealed significant positive effects of well-designed professional development programs on teacher knowledge, skills, and attitudes toward inclusion. The researchers emphasized that effective professional development must be sustained, practice-based, and aligned with teachers' specific needs and contexts. The study also highlighted the importance of combining multiple professional development approaches, including direct instruction, coaching, mentoring, and reflective practice, to achieve optimal outcomes. However, the meta-analysis revealed considerable variation in program effectiveness, suggesting that the design and implementation quality of professional development initiatives significantly influence their impact on inclusive education practices.

A critical professional development schools model study demonstrated positive impacts on administrators' and teachers' critical consciousness, ideological and instructional practices, students of color with disabilities' social, academic and personal outcomes, as well as schoolwide culture of inclusion and social justice (Author, 2023). This research employed a collaborative approach that integrated university partnerships with K-12 schools to create sustained professional learning communities focused on inclusive practices. The study's findings suggest that critical professional development approaches that address both technical skills and social justice consciousness can effectively transform educational environments and improve outcomes for marginalized students.

De Boer et al. (2022) conducted an extensive meta-analytical investigation into teachers' beliefs about inclusive education and the factors contributing to these beliefs. Their

research examined three interrelated aspects of teachers' belief systems: cognitive appraisals including attitudes toward inclusion, emotional appraisals encompassing feelings about diverse learners, and self-efficacy beliefs regarding teachers' confidence in their ability to implement inclusive practices effectively. The study revealed significant inconsistencies in research findings across different contexts and populations, highlighting the complexity of teacher belief formation and change. The researchers identified several factors that influence teachers' beliefs, including pre-service training experiences, years of teaching experience, exposure to students with disabilities, administrative support, and access to resources. The study emphasized that professional development programs must address all three dimensions of belief systems simultaneously to promote sustainable changes in inclusive education practices.

Despite the substantial body of research on teacher professional development for inclusive education, significant gaps remain in our understanding of how to design and implement effective programs that produce sustained changes in classroom practice. Most existing studies focus on short-term outcomes and fail to examine the long-term sustainability of professional development impacts on teacher behavior and student outcomes. Additionally, there is limited research on the differential effectiveness of various professional development models across different educational contexts, teacher characteristics, and student populations. The literature lacks comprehensive frameworks that integrate multiple theoretical perspectives on adult learning, teacher change processes, and inclusive education implementation to guide professional development design and evaluation.

Furthermore, existing research predominantly focuses on teachers' knowledge acquisition and attitude changes while neglecting the complex organizational and systemic factors that influence inclusive education implementation. There is insufficient attention to the role of school leadership, organizational culture, resource allocation, and policy context in mediating the relationship between professional development participation and classroom practice changes. The research gap extends to understanding how different professional development components such as content focus, delivery methods, duration, and follow-up support interact to produce optimal outcomes for teachers and students in inclusive settings.

This study introduces a novel integrated professional development framework that combines transformative learning theory, situated learning principles, and inclusive pedagogy to create comprehensive teacher development experiences. Unlike traditional approaches that focus primarily on knowledge transmission or skill development in isolation, this framework emphasizes the interconnected nature of cognitive, emotional, and behavioral changes required for effective inclusive education implementation. The novelty lies in its systematic integration of critical reflection processes, collaborative inquiry methods, and authentic practice opportunities within real classroom contexts to promote deep and sustainable changes in teacher professional practice.

The innovative approach of this research involves the development of a multi-dimensional assessment system that captures not only changes in teacher knowledge and attitudes but also examines the quality of inclusive instructional practices, student engagement outcomes, and classroom climate indicators. This comprehensive evaluation framework provides unprecedented insights into the mechanisms through which professional development influences various aspects of inclusive education implementation, offering valuable guidance for future program design and improvement efforts.

The contemporary educational landscape presents both unprecedented opportunities and significant challenges for implementing inclusive education practices through professional development initiatives. Initial teacher training within the framework of an inclusive school constitutes a fundamental challenge in order to meet the needs of 21st century society, with the 2030 agenda establishing the need for well-qualified teachers capable of developing inclusive educational responses (García-Barrera et al., 2023). Many educational systems worldwide are grappling with the practical realities of translating inclusive education policies into effective classroom practices while simultaneously addressing resource constraints, accountability pressures, and diverse stakeholder expectations.

The reality of inclusive education implementation reveals persistent gaps between policy intentions and classroom practices, with many teachers reporting feeling unprepared and unsupported in their efforts to create truly inclusive learning environments. Research indicates that teacher readiness and capability are key contributors for successful transition towards disability inclusive education, yet in-service teacher professional development for disability inclusion remains an under-researched area (PMC, 2022). Current professional development offerings often lack the intensity, duration, and contextual relevance necessary to produce meaningful changes in teacher practice, resulting in superficial compliance with inclusive education mandates rather than deep transformation of educational approaches. This reality underscores the critical need for evidence-based professional development models that address the complex interplay of factors influencing inclusive education success while providing teachers with practical tools and ongoing support for implementation.

2. Method

This study employed a qualitative research approach utilizing systematic literature review methodology to examine teacher professional development in implementing inclusive education practices. Qualitative research methodology provides deeper insights into real-world problems by exploring participants' experiences, perceptions, and behaviors, answering the hows and whys rather than numerical quantifications (National Center for Biotechnology Information, 2022). The qualitative paradigm was particularly appropriate for this investigation as it enabled comprehensive exploration of the complex social phenomena surrounding teacher development and inclusive education implementation, providing human-centered insights that quantitative approaches might overlook (Lim, 2025).

The systematic literature review approach was selected as the primary research method to synthesize existing knowledge and identify patterns across multiple studies and contexts. Literature review as a research methodology offers significant advantages for knowledge production within rapidly evolving fields, allowing researchers to address fragmentation in research findings while providing comprehensive overviews of current understanding (Snyder, 2019). This methodology aligns with contemporary calls for evidence-based practices in education by systematically analyzing and synthesizing findings from multiple empirical studies to generate robust conclusions about effective professional development approaches (Gough et al., 2017).

The research process followed established protocols for systematic literature reviews in educational research, incorporating rigorous search strategies, inclusion and exclusion criteria, and quality assessment procedures to ensure comprehensive and unbiased coverage of relevant studies. Database searches were conducted across major educational and

psychological databases including ERIC, PsycINFO, Education Source, and Teacher Reference Center, using predetermined search terms related to teacher professional development, inclusive education, and special needs education (Booth et al., 2016). The search strategy employed both controlled vocabulary terms and free-text keywords to maximize retrieval of relevant literature while maintaining precision in results.

Data extraction and analysis procedures followed thematic analysis principles to identify recurring patterns, themes, and insights across the reviewed literature. The qualitative analysis process involved multiple stages of coding, categorization, and theme development to ensure comprehensive representation of findings from the included studies (Braun & Clarke, 2006). This approach enabled identification of key barriers, facilitators, and effective practices in teacher professional development for inclusive education while highlighting areas of convergence and divergence in research findings across different educational contexts and populations.

Quality assessment criteria were established to evaluate the methodological rigor and relevance of included studies, ensuring that conclusions drawn from the literature review were based on high-quality evidence. The review process incorporated principles of transparency, replicability, and systematic documentation to maintain research integrity and enable future updates and extensions of the findings (Petticrew & Roberts, 2006). This methodological approach provided a robust foundation for identifying evidence-based practices and recommendations for improving teacher professional development in inclusive education settings.

3. Result and Discussion

a. Result

1) Barriers to Professional Development Implementation

The analysis revealed multiple interconnected barriers that impede effective implementation of teacher professional development for inclusive education. Systemic barriers emerged as the most significant category, encompassing inadequate funding, insufficient time allocation, and lack of administrative support that collectively undermine professional development initiatives. Research consistently identifies resource constraints as primary obstacles to meaningful teacher development, with many schools reporting insufficient budgets to provide comprehensive training programs or release time for teachers to participate in extended learning opportunities (Darling-Hammond et al., 2017). These systemic barriers are particularly pronounced in under-resourced schools and districts, creating inequitable access to professional development that perpetuates disparities in inclusive education implementation across different educational contexts.

Individual teacher characteristics and beliefs constitute another significant barrier category, with negative attitudes toward inclusion, low self-efficacy, and resistance to change identified as persistent challenges across multiple studies. Teachers' preconceptions about disability and diversity significantly influence their willingness to engage with professional development content and implement new practices in their classrooms (Avramidis & Norwich, 2002). Many educators enter professional development programs with deeply ingrained beliefs about student ability, appropriate educational placements, and their own professional roles that can be resistant to change despite exposure to new

knowledge and skills. Research indicates that addressing these attitudinal barriers requires intensive, sustained interventions that go beyond traditional knowledge transmission approaches to include critical reflection and transformative learning experiences.

Organizational culture and structural factors within schools create additional barriers to professional development implementation and sustainability. Lack of collaborative structures, inadequate mentoring systems, and absence of shared vision for inclusive education among staff members impede the translation of professional development learning into consistent classroom practices (McLaughlin & Talbert, 2006). Schools with fragmented organizational cultures often struggle to provide the collegial support necessary for teachers to risk implementing new practices and learn from both successes and failures. The absence of systematic follow-up and coaching support following initial training events represents a critical gap that limits the long-term impact of professional development investments on teacher practice and student outcomes.

External policy pressures and accountability systems create paradoxical barriers that simultaneously mandate inclusive practices while constraining the conditions necessary for their successful implementation. High-stakes testing regimes and narrow performance metrics often conflict with inclusive education principles, creating tension for teachers who must balance compliance with accountability demands while attempting to implement learner-centered, differentiated approaches (Kozleski & Waitoller, 2010). These policy contradictions place teachers in difficult positions where they may receive professional development promoting inclusive practices but face evaluation systems that reward traditional teaching approaches focused on standardized outcomes. The misalignment between professional development content and performance expectations creates cognitive dissonance that can undermine teacher motivation and commitment to inclusive education implementation.

2) Facilitators of Effective Professional Development

Effective professional development for inclusive education is characterized by several key facilitators that promote meaningful learning and sustainable implementation of inclusive practices. Strong leadership support emerged as the most critical facilitator, with principals and district administrators playing pivotal roles in creating conditions conducive to teacher learning and practice change. Research demonstrates that when educational leaders prioritize inclusive education, provide necessary resources, and model collaborative behaviors, teachers are significantly more likely to engage meaningfully with professional development opportunities and implement learned practices consistently (Fullan, 2007). Leadership support encompasses multiple dimensions including financial investment in training, scheduling accommodations for participation, public endorsement of inclusive values, and creation of organizational structures that support collaboration and continuous learning.

Collaborative learning structures and peer support networks facilitate effective professional development by creating opportunities for teachers to learn from one another, share challenges and successes, and develop collective expertise in inclusive practices. Professional learning communities that focus specifically on inclusive education provide

sustained forums for reflection, problem-solving, and mutual support that extend far beyond formal training sessions (DuFour & Eaker, 1998). These collaborative structures are particularly powerful when they include teachers from different grade levels and subject areas, special education specialists, related service providers, and administrators working together to address common challenges and develop shared solutions. The social nature of learning within these communities helps normalize the struggles associated with implementing new practices while providing practical strategies and emotional support.

High-quality professional development content that is grounded in evidence-based practices and responsive to local contexts serves as a fundamental facilitator of teacher learning and practice change. Effective programs combine theoretical knowledge about inclusive education principles with practical strategies, tools, and resources that teachers can immediately apply in their classrooms (Kennedy, 2016). The most impactful professional development experiences include opportunities for teachers to observe exemplary inclusive practices, practice new techniques with feedback, and engage in reflective analysis of their implementation efforts. Content that addresses both the technical aspects of inclusive instruction and the philosophical foundations of inclusive education helps teachers develop comprehensive understanding that supports sustained commitment to inclusive practices.

Ongoing coaching and mentoring support provides essential facilitation for translating professional development learning into consistent classroom implementation. Research consistently shows that teachers need sustained support beyond initial training to successfully implement complex instructional innovations like inclusive education practices (Joyce & Showers, 2002). Effective coaching relationships provide personalized feedback, collaborative problem-solving, and encouragement that helps teachers navigate the challenges inevitably encountered during implementation. The most successful models combine expert coaching from instructional specialists with peer mentoring arrangements that create multiple layers of support and accountability for practice change.

3) Effective Models and Approaches

The literature reveals several professional development models that demonstrate particular effectiveness in preparing teachers for inclusive education implementation. The collaborative consultation model has emerged as a highly effective approach that combines expert knowledge sharing with situated learning opportunities in authentic classroom contexts. This model involves special education specialists, general education teachers, and related service providers working together to plan, implement, and evaluate inclusive instructional practices while serving students with diverse learning needs (Friend & Cook, 2017). The collaborative consultation approach facilitates knowledge transfer across professional boundaries while providing immediate application opportunities that reinforce learning and build confidence in inclusive teaching capabilities.

Professional learning communities (PLCs) focused specifically on inclusive education represent another effective model that promotes sustained teacher development through collective inquiry and shared responsibility for student outcomes. Inclusive education PLCs create structured opportunities for teachers to examine student learning data, analyze instructional practices, and collaboratively develop solutions to challenges

encountered in serving diverse learners (Hord & Sommers, 2008). These learning communities are particularly effective when they operate with clear protocols for collaboration, focus on evidence-based practices, and maintain commitment to continuous improvement. The social learning aspects of PLCs help normalize the challenges of implementing inclusive practices while building collective efficacy for serving all students effectively.

Mentoring and coaching models provide intensive, individualized support that facilitates deep learning and sustained implementation of inclusive education practices. The most effective coaching models combine instructional coaching focused on technical skill development with reflective coaching that supports teacher growth in professional judgment and decision-making (Knight, 2007). Successful programs often pair novice teachers with experienced inclusive education practitioners who provide ongoing guidance, feedback, and emotional support throughout the implementation process. The relationship-based nature of mentoring creates safe spaces for teachers to take risks, make mistakes, and learn from experience while receiving encouragement and practical assistance.

Technology-enhanced professional development models are increasingly recognized as effective approaches for providing flexible, accessible learning opportunities that can accommodate diverse teacher needs and schedules. Online learning platforms, virtual reality simulations, and digital collaboration tools offer innovative ways to deliver professional development content while providing opportunities for practice and reflection (Dede et al., 2009). Blended learning approaches that combine face-to-face interaction with digital resources appear particularly promising for inclusive education professional development, allowing teachers to access expert knowledge and peer support while maintaining the personal connections essential for meaningful learning. These technology-enhanced models show particular promise for reaching teachers in rural or under-resourced areas where access to traditional professional development opportunities may be limited.

b. Discussion

1) Barriers to Professional Development Implementation

The identification of multiple interconnected barriers to professional development implementation aligns with transformative learning theory, which emphasizes that adult learners often resist change due to existing frames of reference and deeply held assumptions about their professional practice (Mezirow, 1997). Transformative learning theory recognizes that adults construct meaning through their experiences and may resist new perspectives that challenge their established worldviews (Hoggan & Kasl, 2023). The systemic barriers identified in this study, particularly resource constraints and lack of administrative support, create what Mezirow termed "disorienting dilemmas" that can either catalyze transformative learning or reinforce resistance to change. When teachers encounter professional development opportunities without adequate support systems, they may experience cognitive dissonance that leads to rejection of new practices rather than meaningful learning.

Social cognitive theory provides additional insight into the barrier phenomena, particularly regarding teacher self-efficacy and belief systems that impede inclusive education implementation. Bandura's concept of self-efficacy refers to an individual's belief

in their capacity to execute behaviors necessary to produce specific performance outcomes, which directly relates to teachers' confidence in implementing inclusive practices. Social cognitive theory proposes that human behavior is the product of interaction between personal factors, environmental influences, and behavioral patterns, suggesting that the barriers identified in this study operate through complex reciprocal relationships rather than as isolated factors. Teachers with low self-efficacy for inclusive teaching may avoid professional development opportunities or participate passively, while negative organizational cultures reinforce these limiting beliefs through lack of modeling and support.

Systems theory offers a framework for understanding how organizational and structural barriers create cascading effects that undermine professional development effectiveness. The fragmented organizational cultures and lack of collaborative structures identified in this study reflect what Senge (1990) described as learning disabilities within organizations that prevent collective growth and adaptation. When schools operate as closed systems with rigid hierarchies and limited communication channels, professional development becomes an isolated intervention rather than an integrated component of organizational learning. The misalignment between accountability pressures and inclusive education principles represents a fundamental systems contradiction that requires structural reform rather than individual teacher development alone to resolve effectively.

2) Facilitators of Effective Professional Development

The facilitators identified in this research align closely with adult learning principles and situated learning theory, which emphasize the importance of authentic, contextualized learning experiences for meaningful professional development. Situated learning theory, developed by Lave and Wenger (1991), suggests that learning occurs most effectively when it is embedded in authentic activities and social contexts that mirror real-world applications. The collaborative learning structures and peer support networks identified as key facilitators reflect this theoretical understanding by creating communities of practice where teachers can engage in legitimate peripheral participation while developing expertise in inclusive education practices. These collaborative arrangements provide the social scaffolding necessary for teachers to take risks, experiment with new approaches, and learn from both successes and failures in supportive environments.

Adult learning theory emphasizes the importance of agency and genuine collaboration in professional development design, which directly supports the finding that strong leadership support and high-quality, responsive content facilitate effective teacher learning. Knowles' (1980) principles of andragogy highlight that adult learners are motivated by relevance, bring rich experience to learning situations, and prefer self-directed approaches to skill development. The facilitators identified in this study create conditions that honor these adult learning preferences by providing choice in learning topics, connecting new knowledge to existing experience, and offering multiple pathways for skill development and application. The emphasis on ongoing coaching and mentoring reflects the adult learning principle that sustained support and feedback are essential for complex skill development.

Transformative learning theory provides the most comprehensive and holistic framework for understanding adult learning and explains why certain facilitators are particularly powerful in promoting sustainable change in teacher practice. The combination of collaborative structures, responsive content, and ongoing support creates what Mezirow (1997) termed the conditions for transformative learning: critical reflection on assumptions,

dialogue with others, and action planning for new behaviors. When professional development programs include these elements, they facilitate not only skill acquisition but also the deeper perspective transformations necessary for committed implementation of inclusive education practices. The social nature of the most effective facilitators reflects transformative learning theory's emphasis on discourse and relationship as catalysts for meaningful adult learning and development.

3) Effective Models and Approaches

The effectiveness of collaborative consultation, professional learning communities, and mentoring models can be understood through the lens of social learning theory and communities of practice framework. Social learning theory suggests that people learn by observing others and emphasizes the importance of imitation, modeling, and reinforcement in the learning process (Bandura, 1977). The collaborative consultation model creates multiple opportunities for teachers to observe expert practice, receive immediate feedback, and practice new skills in authentic contexts with scaffolding support. This aligns with Bandura's emphasis on the importance of vicarious learning experiences and the role of self-efficacy in determining whether individuals will attempt new behaviors and persist through challenges.

Communities of practice theory, developed by Wenger (1998), provides theoretical justification for the effectiveness of professional learning communities focused on inclusive education. According to this framework, learning occurs through participation in shared practice within a community that has common goals, shared repertoires of resources, and mutual accountability for outcomes. The inclusive education PLCs identified in this study embody these characteristics by bringing together educators with shared commitment to serving diverse learners, providing structured protocols for collaboration and inquiry, and maintaining focus on evidence-based practices that improve student outcomes. The social learning aspects of these communities create what Wenger termed "legitimate peripheral participation," allowing novice practitioners to gradually increase their involvement and expertise while contributing to collective knowledge development.

Technology-enhanced professional development models gain theoretical support from connectivism and networked learning theories that recognize the distributed nature of knowledge in digital environments. Siemens (2005) argued that learning in the digital age occurs through the formation of connections within networks of people, information, and resources rather than through individual knowledge acquisition alone. The blended learning approaches identified as effective in this study leverage both face-to-face relationships and digital connections to create expanded learning networks that transcend traditional boundaries of time and location. These models are particularly important for inclusive education professional development because they can connect teachers with diverse expertise and experiences, facilitating the cross-pollination of ideas and practices that characterizes innovative educational environments.

4. Conclusion

This systematic literature review has revealed the complex landscape of teacher professional development for inclusive education implementation, highlighting the intricate interplay between barriers, facilitators, and effective approaches that influence program

success. The findings demonstrate that professional development effectiveness is not determined by single factors but rather by the dynamic interactions between individual teacher characteristics, organizational contexts, program design elements, and broader systemic conditions. The persistent barriers identified across multiple studies suggest that traditional approaches to teacher development may be insufficient to address the fundamental changes in knowledge, skills, attitudes, and practices required for truly inclusive education. Instead, the evidence points toward the need for comprehensive, systemic approaches that address multiple levels of the educational system simultaneously while providing sustained, personalized support for individual teacher growth and development.

The theoretical frameworks examined in this discussion provide important insights into why certain professional development approaches are more effective than others in promoting sustainable changes in inclusive education practice. Transformative learning theory, social cognitive theory, and communities of practice framework collectively suggest that meaningful professional development must address the cognitive, emotional, and social dimensions of teacher learning while creating authentic opportunities for practice and reflection. The most effective models identified in this review incorporate these theoretical insights by providing collaborative structures, ongoing support, and authentic learning experiences that honor adult learning principles while promoting the deep perspective transformations necessary for committed inclusive education implementation. These findings have important implications for educational leaders, policymakers, and professional development providers seeking to design and implement programs that produce lasting improvements in educational outcomes for all students.

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