



Enhancing Early Childhood Teacher Readiness for Inclusive Special Education in Malaysia: A Capacity-Building Initiative

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Abstract. The readiness of Early Childhood Education (ECE) teachers to effectively support children with special education needs (SEN) remains a pressing challenge within Malaysia's efforts to implement inclusive education. Although national policies emphasize the importance of inclusive practices, many ECE teachers continue to face gaps in pedagogical knowledge, practical classroom strategies, and confidence when teaching children with diverse needs. This study outlines a structured professional development initiative that involved 50 ECE teachers across four phases: needs assessment, curriculum development, training implementation, and outcome evaluation. The findings demonstrated a significant increase in teacher preparedness, with knowledge assessment scores improving by nearly 30 percent and marked enhancements in the use of differentiated instruction, behavioural management techniques, and understanding of individualized education plans. Qualitative observations further indicated that children with SEN showed greater engagement and improved social interactions in classrooms led by trained teachers. These results highlight the transformative impact of sustained, hands-on training supported by expert mentoring, and present a scalable professional development model aligned with Malaysia's inclusive education goals. The study provides practical insights for policymakers and educators seeking to strengthen the integration of inclusive strategies into early childhood education.

Keywords: Early Childhood Education (ECE); Special Education Needs (SEN); Teacher readiness; Individualized Education Plans (IEPs); Classroom strategies

1. Introduction

Inclusive education has become a central principle in global educational reform, advocating for the right of every child regardless of physical, intellectual, social, emotional, linguistic, or other conditions to access quality education within mainstream settings (UNESCO, 2009). In Malaysia, this principle is reflected in the Malaysia Education Blueprint 2013–2025, which emphasizes equitable access to education and highlights the need for inclusive practices at all levels, including early childhood education (Ministry of Education Malaysia, 2013). However, despite these policy aspirations, the implementation of inclusive education, particularly in early childhood settings, remains inconsistent and underdeveloped.

Early Childhood Education (ECE) teachers play a foundational role in nurturing the holistic development of children. Their ability to recognize and respond to diverse learning needs is essential for creating inclusive learning environments (Florian & Black-Hawkins, 2011). Yet, many ECE practitioners in Malaysia report limited exposure to special education training, insufficient knowledge of inclusive pedagogies, and a lack of confidence in managing children with special education needs (Lee & Low, 2019). These challenges are further exacerbated by systemic constraints such as inadequate professional development programs, lack of classroom support, and limited access to expert guidance (Sharma, Forlin, & Loreman, 2008).

Research has shown that teacher preparedness is a key determinant of successful inclusion, and that structured, context-specific training can significantly improve both teacher competence and learner outcomes (Smith, 2020; Salend, 2016). Specifically, training that incorporates practical components such as workshops, mentoring, and classroom application has been found to be more effective than purely theoretical approaches. However, in Malaysia, such training remains sporadic and lacks standardization across institutions.

In response to these challenges, this study presents a professional development intervention aimed at enhancing ECE teachers' readiness to implement inclusive practices. By focusing on needs-based training, practical skill development, and ongoing support, the initiative seeks to bridge the gap between inclusive education policy and classroom realities. The study contributes not only to improving teacher competence but also to developing a replicable and sustainable model for inclusive early childhood education in Malaysia.

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N. A. Ishak et al. (eds.), *Proceedings of the International Conference on Cross-Disciplinary Academic Research 2025 - Track 3 Advances in Humanities, Education, Teaching, Learning and Arts (ICAR-T3 2025)*, Advances in Social Science, Education and Humanities Research 1006,
https://doi.org/10.2991/978-94-6239-662-3_4

2. Literature Review

Inclusive education emphasizes the participation of all learners, including children with special education needs (SEN), in mainstream educational settings (UNESCO, 2021; OECD, 2023). In early childhood education (ECE), inclusive practice is particularly critical, as early intervention and supportive learning environments significantly influence children's long-term developmental outcomes. Inclusive pedagogy extends beyond individualized support to encompass universal strategies that benefit all learners, aligning closely with principles of Universal Design for Learning (UDL) and child-centred approaches (Florian & Black-Hawkins, 2011; UNESCO, 2020).

Despite increasing policy emphasis on inclusion, empirical studies consistently indicate that many ECE teachers feel inadequately prepared to implement inclusive practices, particularly when supporting children with SEN. Recent research in preschool contexts reports that teachers have general conceptual understanding but lack detailed knowledge and practical skills necessary for meaningful inclusive practice, suggesting a need for deeper professional preparation (Balik & Ozgun, 2024). Large-scale reviews also show that many inclusive pedagogical frameworks in teacher preparation remain underdeveloped across countries, reinforcing the global nature of this challenge.

Research has also shown that teacher attitudes and self-efficacy play a crucial role in the successful implementation of inclusive education. Teachers with higher levels of confidence and positive beliefs about inclusion are more likely to adopt inclusive instructional strategies and foster supportive classroom environments (Sharma, Loreman, & Forlin, 2019; Yada & Savolainen, 2022; Savolainen et al., 2023). However, without structured professional development, positive attitudes alone are insufficient to translate inclusive policies into effective classroom practices.

In the Malaysian context, several recent studies report that while awareness of inclusive education has improved, practical implementation remains inconsistent. Lee, Low, and Daniel (2020) found that many ECE teachers in Malaysia receive only minimal exposure to inclusive education during pre-service training, resulting in limited readiness to support children with SEN. Similarly, Kaur and Normah (2021) reported that the absence of dedicated SEN modules and hands-on training opportunities contributes to persistent skill gaps among both pre-service and in-service ECE teachers. These findings are reinforced by newer studies showing continued variability in teacher preparation and competency in implementing differentiated practices.

International evidence strongly supports the effectiveness of structured professional development programs that integrate theoretical knowledge with practical application. Empirical studies indicate that training models incorporating workshops, coaching, classroom-based practice, and reflective mentoring lead to significant improvements in teachers' instructional strategies, confidence, and inclusive classroom management (Sharma et al., 2018; Darling-Hammond et al., 2020). Recent action research in inclusive early childhood contexts demonstrates that project-based pedagogical training enhances teacher competence and classroom engagement, emphasizing experiential learning as a key component of professional growth (Sari & Wulandari, 2023). In addition, emerging research on virtual professional development shows measurable gains in educators' knowledge of Universal Design for Learning (UDL), co-teaching, and differentiated instruction, highlighting the potential of scalable and sustainable models for ongoing teacher support (Al-Attayah & Al-Hamdan, 2024).

Nevertheless, the literature consistently identifies a gap between inclusive education policy and classroom practice, especially in ECE contexts. Many existing professional development initiatives are short-term, fragmented, or insufficiently contextualised to local settings, limiting their long-term impact (UNESCO, 2021). Scholars increasingly emphasize the need for scalable, sustainable, and context-specific professional development models that support continuous learning and collaboration among educators (OECD, 2020; Forlin & Sin, 2023). Furthermore, systematic analyses stress that effective inclusive practice must incorporate community partnerships, classroom coaching, and reflective practice to bridge the research-practice divide.

In summary, existing literature highlights the importance of targeted, practice-oriented professional development in strengthening ECE teachers' readiness for inclusive education. While international and local studies provide strong evidence of the benefits of structured training, there remains a clear need for empirically grounded models tailored to the Malaysian ECE context. This study seeks to address this gap by assessing teacher preparedness, evaluating the effectiveness of a structured training program, and proposing a sustainable professional development model for inclusive early childhood education in Malaysia.

3. Research Objectives

1. To assess the current level of knowledge, attitudes, and preparedness of ECE teachers regarding inclusive education and SEN practices.
2. To design and implement a structured professional development program that integrates theoretical learning with practical application for inclusive teaching.
3. To evaluate the effectiveness of the training in improving teachers' instructional strategies, confidence, and classroom practices.
4. To examine the impact of teacher training on the learning engagement and social interaction of children with SEN in early childhood settings.
5. To propose a scalable and sustainable model for professional development in inclusive early childhood education.

4. Research Questions

Based on the objectives above, the study addresses the following research questions:

1. What is the current level of knowledge, attitudes, and preparedness among ECE teachers in Malaysia in supporting children with special education needs?
2. How is the structured professional development program for inclusive teaching designed and implemented to integrate theoretical knowledge with practical application?
3. How effective is the structured professional development program in improving ECE teachers' instructional strategies, confidence, and inclusive classroom practices?
4. What is the impact of teacher training on the learning engagement and social interaction of children with special education needs in early childhood settings?
5. What key elements should be included in a scalable and sustainable professional development model for inclusive early childhood education?

5. Methodology

This study employed a mixed-methods intervention research design to examine and enhance Early Childhood Education (ECE) teachers' readiness to implement inclusive education for children with special education needs (SEN) in Malaysia. The mixed-methods approach was selected to allow for methodological triangulation, combining quantitative measures of teacher knowledge and confidence with qualitative insights into classroom practices and learner engagement. This design ensured comprehensive coverage of all five research questions while strengthening the validity and reliability of the findings through the integration of multiple data sources.

A quasi-experimental pretest-posttest design was used to address Research Questions 1 and 2 by measuring changes in teachers' knowledge, attitudes, and self-efficacy before and after participation in the professional development intervention. To address Research Questions 3 and 4, qualitative methods including classroom observations, semi-structured interviews, and focus group discussions (FGDs) were employed to examine changes in teaching practices and the resulting impact on children with SEN. Research Question 5 was addressed through thematic synthesis and triangulation of findings across all phases to identify key elements of a scalable and sustainable professional development model.

The study involved 50 ECE teachers from public and private early childhood centres across three Malaysian states. Participants were selected using purposive sampling based on the criteria of having at least one year of teaching experience and currently teaching in classrooms that included children with identified SEN. The intervention was conducted over a 12-month period and implemented in four sequential phases to ensure clarity and coherence of the methodological process.

The first phase focused on needs assessment and was conducted during the initial two months of the study. A baseline survey adapted from Sharma et al. (2012) was administered to all participating teachers to assess their existing knowledge, attitudes, and perceived readiness for inclusive education. This quantitative data was complemented by focus group discussions with 18 selected participants to explore contextual challenges,

training gaps, and support needs in greater depth. Findings from this phase informed the design and focus of the professional development programme.

The second phase involved curriculum development, carried out during months three and four. Based on the needs assessment findings, training modules were collaboratively developed with special education experts. The curriculum addressed inclusive pedagogies, differentiated instruction, behavioural management strategies, classroom accommodations, and the development and implementation of Individualised Education Plans (IEPs). The training design emphasised experiential learning, case-based discussions, collaborative problem-solving, and practical classroom application to ensure contextual relevance and transferability of skills.

The third phase, spanning months five to ten, consisted of training implementation and mentoring support. Six regional workshops were conducted, each incorporating hands-on activities, peer collaboration, and simulated classroom scenarios. Teachers were provided with inclusive teaching toolkits and paired with experienced mentors who offered ongoing coaching and classroom-based guidance throughout the implementation period. At the conclusion of this phase, post-training assessments were administered to measure changes in teacher knowledge, confidence, and instructional practices.

The final phase focused on evaluation and impact analysis and was conducted during the final two months of the study. Classroom observations were carried out in 15 early childhood classrooms that included a total of 23 children with formally identified special education needs, such as developmental delays, speech and language difficulties, and mild learning disabilities. Each classroom was observed twice, once prior to the intervention and once during the evaluation phase using a structured observation rubric to assess inclusive teaching practices and student engagement. In addition, semi-structured interviews were conducted with teachers and parents to gather perspectives on changes in classroom dynamics, learner engagement, and social interaction.

Quantitative data from pre- and post-intervention assessments were analysed using paired-sample t-tests and Cohen's *d* effect size to determine the statistical significance and magnitude of changes in teacher knowledge and self-efficacy. Qualitative data from interviews, observations, and FGDs were analysed thematically using NVivo software, allowing for the identification of recurring patterns and meaningful insights grounded in classroom practice. Data triangulation across quantitative and qualitative sources was employed to enhance credibility and to support the development of a replicable professional development framework.

Ethical approval for the study was obtained from the relevant institutional research ethics committee prior to data collection. Written informed consent was secured from all participating teachers and from parents or guardians of children involved in classroom observations. Participation was voluntary, confidentiality was maintained through anonymisation of data, and all procedures adhered to established ethical guidelines for educational research.

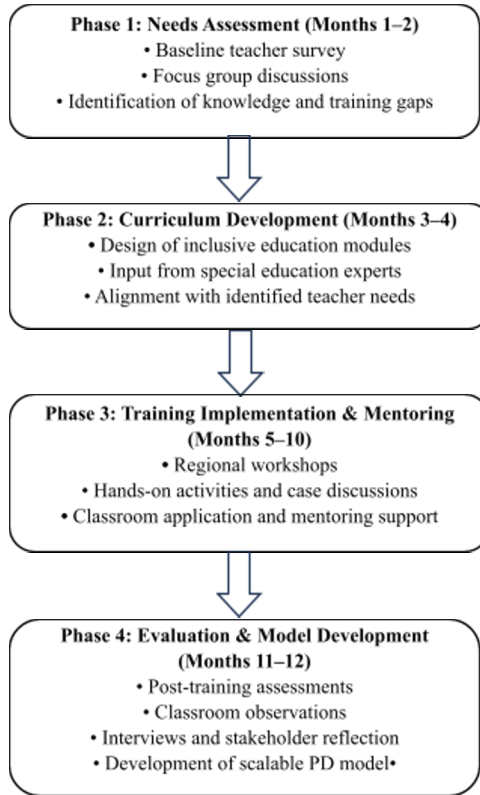


Fig 1. Four-Phase Methodological Framework of the Study

6. Findings

This section presents the outcomes of the study in accordance with the five research questions (RQ1–RQ5), each addressing a specific research objective. The results are based on both quantitative and qualitative data collected before, during, and after the professional development intervention. Tables are included to illustrate key data and support interpretation of the findings.

6.1 RQ1: What is the current level of knowledge, attitudes, and preparedness among ECE teachers in Malaysia in supporting children with special education needs?

Baseline assessment results indicated that the majority of Early Childhood Education (ECE) teachers entered the programme with limited knowledge, low confidence, and insufficient preparedness for inclusive teaching. In this study, *knowledge* refers to teachers' understanding of inclusive education concepts and practices, particularly Individualised Education Plans (IEPs) and SEN-related instructional strategies; *attitudes* are reflected through teachers' self-reported confidence and willingness to teach children with SEN; and *preparedness* encompasses prior exposure to inclusive education training and perceived readiness to manage inclusive classrooms.

Table 1. Baseline Teacher Preparedness (Pre-Training)

Indicator	Percentage (%)
Understanding of IEPs	38
Prior Inclusive Training	30
Confidence in Managing SEN (Confident)	40
Confidence in Managing SEN (Uncertain)	60

As shown in Table 1, only 38% of teachers reported having a functional understanding of IEPs, indicating limited knowledge of formal planning tools required for supporting children with special education needs. In terms of professional preparation, just 30% of participants had previously attended any form of inclusive education training, highlighting a significant gap in both pre-service and in-service professional development opportunities. Regarding attitudes and self-efficacy, 40% of teachers reported feeling confident in managing children with SEN, while a majority (60%) expressed uncertainty or lack of confidence in doing so.

These quantitative findings were further supported by data from focus group discussions, in which teachers consistently described minimal exposure to inclusive strategies, limited institutional support, and uncertainty about adapting lessons to meet diverse learner needs. Participants frequently reported feeling unprepared to design differentiated activities or manage behavioural challenges associated with SEN due to insufficient training and guidance.

Overall, the baseline results demonstrate that while some teachers possess foundational awareness of inclusive education, systematic knowledge, confidence, and preparedness remain limited. These findings clearly underscore the need for a comprehensive, practice-oriented professional development intervention to strengthen teachers' capacity to implement inclusive education effectively in early childhood settings.

6.2 RQ2: How is the structured professional development program for inclusive teaching designed and implemented to integrate theoretical knowledge with practical application?

The structured professional development programme was intentionally designed to integrate theoretical foundations of inclusive education with hands-on, classroom-based application. The training combined conceptual instruction on inclusive pedagogy, differentiated instruction, behaviour management, and Individualised Education Plans (IEPs) with practical learning activities such as case-based discussions, role-play scenarios, collaborative lesson planning, and guided reflection. This design ensured that teachers were not only exposed to inclusive education theory but were also supported in translating this knowledge into actionable classroom practices. Table 2: Teacher Knowledge Assessment (Pre and Post Training).

Assessment	Mean Score	Standard Deviation
Pre-Test	54.2	10.5
Post-Test	82.7	9.3

Implementation of the programme occurred through a series of regional workshops supported by mentoring and peer collaboration. During the workshops, theoretical concepts were first introduced and discussed, followed immediately by opportunities for teachers to apply these concepts to authentic classroom scenarios. Teachers were guided to adapt lesson plans, design inclusive activities, and reflect on potential challenges in their own teaching contexts. Ongoing mentoring further reinforced this integration by providing follow-up support and feedback as teachers implemented inclusive strategies in their classrooms.

The effectiveness of this theory-practice integration is reflected in the quantitative outcomes presented in Table 2. Teachers’ mean knowledge assessment scores increased substantially from 54.2 (SD = 10.5) in the pre-test to 82.7 (SD = 9.3) in the post-test. This marked improvement indicates that the programme design successfully strengthened teachers’ understanding of inclusive education concepts while enabling them to internalise and apply these principles in practice. The substantial gain in post-training scores suggests that learning activities grounded in real classroom experiences were effective in reinforcing theoretical knowledge.

Overall, the findings demonstrate that the structured professional development programme effectively bridged the gap between theory and practice by combining targeted instructional content with experiential learning and sustained support. The improvements shown in Table 2 provide empirical evidence that a training model grounded in practical application can significantly enhance teachers’ inclusive education knowledge and readiness.

6.3 RQ3: How effective is the structured professional development program in improving ECE teachers’ instructional strategies, confidence, and inclusive classroom practices?

The effectiveness of the structured professional development programme in improving teachers’ instructional strategies and inclusive classroom practices is evidenced by clear changes in observed teaching behaviours following the intervention. In this study, improvements in *teacher confidence* are reflected through teachers’ increased and consistent application of inclusive instructional strategies in classroom settings, rather than through self-reported measures alone.

Table 3. Change in Use of Inclusive Strategies

Inclusive Strategy	Before Training (%)	After Training (%)
Adapted Lesson Plans	22	78
Use of Visual Aids	25	85
Positive Reinforcement	30	80

As presented in Table 3, substantial improvements were observed across all key instructional practices examined. Prior to the intervention, only 22% of teachers regularly adapted lesson plans to accommodate diverse learning needs; following the training, this figure increased to 78%, indicating a significant shift toward proactive and inclusive instructional planning. Similarly, the use of visual aids increased from 25% before the training to 85% after the intervention, demonstrating enhanced use of accessible teaching materials to support diverse learners. The application of positive reinforcement strategies also rose markedly, from 30% to 80%, reflecting improved classroom management practices aligned with inclusive education principles.

These changes suggest that the professional development programme was effective in translating knowledge gained during training into observable classroom practices. The increased adoption of inclusive strategies indicates greater teacher confidence in managing diverse learning needs and implementing inclusive pedagogy. Overall, the findings in Table 3 provide strong evidence that the structured professional development intervention led to meaningful improvements in ECE teachers’ instructional strategies and inclusive classroom practices.

6.4 RQ4: What is the impact of teacher training on the learning engagement and social interaction of children with special education needs in early childhood settings?

The impact of teacher training on the learning engagement and social interaction of children with special education needs (SEN) is evident in the observed improvements across key engagement domains following the professional development intervention. As shown in Table 4, children with SEN demonstrated notable positive changes in classroom participation and social behaviours after being taught by trained teachers.

Table 4. Improvement in Student Engagement

Engagement Domain	Improvement (%)
Peer Communication	35
Task Persistence	33
Classroom Involvement	37

Specifically, peer communication improved by 35%, indicating increased interaction and engagement with classmates during learning activities. Task persistence increased by 33%, suggesting that children were better able to sustain attention and remain engaged in classroom tasks. In addition, overall classroom involvement improved by 37%, reflecting greater participation in group activities and responsiveness during instructional sessions. These improvements indicate that changes in teachers' instructional strategies and classroom practices following the training contributed to more inclusive and supportive learning environments for children with SEN.

Overall, the findings presented in Table 4 provide clear evidence that teacher training had a positive impact on both the learning engagement and social interaction of children with special education needs in early childhood settings.

6.5 RQ5: What key elements should be included in a scalable and sustainable professional development model for inclusive early childhood education?

The key elements of a scalable and sustainable professional development model for inclusive early childhood education were identified through the evaluation phase of the study and are summarised in Table 5. These elements were derived from the combined perspectives of participating teachers, facilitators, and other stakeholders who were directly involved in the design, implementation, and evaluation of the professional development programme. Their contributions provided practical insights into which components were most effective, feasible, and sustainable across different early childhood education context.

Table 5. Key Elements of a Replicable Professional Development Model

Key Element	Description
Modular, hands-on workshops	Practical classroom-focused sessions to develop real teaching skills
Structured mentoring support	One-on-one guidance from experienced special education mentors
Provision of inclusive teaching resources	Tools and templates (e.g., IEP forms) for immediate classroom use
Peer exchange and reflection activities	Collaborative platforms for experience sharing and mutual learning
Phased delivery for gradual implementation	Training spread over time to avoid overload and reinforce learning
Integration into pre- and in-service training pathways	Alignment with national teacher training programs to ensure sustainability and scale

As presented in Table 5, modular, hands-on workshops were identified as a core element, as facilitators and teachers highlighted the importance of practical, classroom-focused training that allows skills to be developed incrementally and adapted to diverse teaching environments. Structured mentoring support emerged as another critical component, with stakeholders emphasising the value of ongoing guidance from experienced facilitators in reinforcing inclusive practices beyond initial training sessions. The provision of inclusive teaching resources, such as IEP templates and visual learning tools, was also regarded as essential for supporting immediate classroom application and ensuring consistency in inclusive practice.

In addition, peer exchange and reflection activities were recognised by both facilitators and teachers as important mechanisms for shared learning and professional support, enabling educators to reflect on challenges and exchange effective strategies. Phased delivery of training was identified as a sustainability factor, as it allows teachers sufficient time to practise and refine inclusive strategies without being overwhelmed. Finally, integration into pre-service and in-service training pathways was viewed by stakeholders as essential for long-term scalability, ensuring that inclusive education becomes embedded within formal teacher education and professional development systems.

Overall, the elements outlined in Table 5 represent a practitioner-informed and evidence-based framework for a professional development model that is both scalable and sustainable. By incorporating the perspectives of facilitators and stakeholders who were actively involved in the intervention

7. Discussion

The findings of this study provide robust evidence that structured, practice-oriented professional development can significantly enhance early childhood education (ECE) teachers' readiness to implement inclusive education for children with special education needs (SEN). By directly addressing identified gaps in knowledge, attitudes, and preparedness, the intervention contributes to narrowing the well-documented gap between inclusive education policy aspirations and classroom-level implementation, particularly within early childhood settings (OECD, 2023; Forlin & Sin, 2023).

Teacher Knowledge, Attitudes, and Preparedness

The baseline findings revealed limited teacher preparedness, characterised by low levels of knowledge related to Individualised Education Plans (IEPs), minimal prior exposure to inclusive education training, and reduced confidence in managing inclusive classrooms. These findings are consistent with recent Malaysian and international studies indicating that many early childhood education (ECE) teachers possess a general awareness of inclusive education principles but lack the practical competence, pedagogical skills, and self-efficacy required for effective implementation in classroom settings (Lee et al., 2020; Kaur & Normah, 2021; Savolainen et al., 2023). Similar patterns have been reported in other early childhood contexts, where teachers express positive attitudes towards inclusion but feel inadequately prepared to translate these beliefs into concrete instructional practices due to insufficient training and limited institutional support (Yada & Savolainen, 2022; Balik & Ozgun, 2024).

Although earlier studies such as Loreman, Sharma, and Forlin (2013) are frequently cited in inclusive education literature, it is important to clarify that their empirical work was conducted in Canada, Australia, Hong Kong, and Indonesia, rather than Malaysia. Nevertheless, their findings remain conceptually relevant, as subsequent research continues to demonstrate that insufficient pre-service preparation and limited ongoing professional development remain persistent challenges across diverse education systems (Sharma et al., 2019; Darling-Hammond et al., 2020; OECD, 2023). More recent large-scale and cross-national studies further confirm that teacher preparedness for inclusion is strongly influenced by the depth and quality of training experiences rather than years of teaching alone (Savolainen et al., 2023; Forlin & Sin, 2023). By providing current, context-specific evidence from Malaysian early childhood settings, the present study extends this body of work and reinforces the need for systematic, practice-oriented professional development to strengthen teacher readiness for inclusive education.

Effectiveness of the Professional Development Design

The substantial improvement in teachers' post-training knowledge scores demonstrates the effectiveness of a professional development model that integrates theory with experiential learning. This finding supports contemporary research emphasising that professional learning is most effective when it is continuous, practice-based, and supported by opportunities for reflection and application (Darling-Hammond et al., 2020; Forlin & Sin, 2023).

Rather than relying on one-off workshops, the phased design of the programme incorporating needs analysis, hands-on workshops, mentoring, and evaluation enabled teachers to progressively internalise inclusive concepts and apply them meaningfully within their own classrooms. This aligns with recent empirical studies showing that sustained professional learning interventions are more likely to result in durable changes in teacher practice compared to short-term training models (Buysse et al., 2022; Sari & Wulandari, 2023).

Changes in Instructional Practices and Teacher Confidence

The observed increase in inclusive instructional strategies such as adapted lesson planning, use of visual supports, and positive reinforcement indicates that teachers were able to translate newly acquired knowledge into practice. These findings are consistent with recent studies demonstrating that teacher confidence is closely linked to opportunities for guided practice, feedback, and contextualised support (Sharma et al., 2019; Savolainen et al., 2023).

In this study, the value of mentorship and peer support emerged as a distinct and critical component of teacher development rather than merely a form of positive reinforcement. Mentorship provided structured, expert-guided feedback, while peer collaboration facilitated shared problem-solving and reflective dialogue among teachers. Recent literature highlights that such professional learning communities enhance instructional consistency and sustain inclusive practices over time by reducing teacher isolation and reinforcing collective efficacy (Darling-Hammond et al., 2020; Forlin & Sin, 2023).

Impact on Children with SEN

The improved engagement and social interaction of children with SEN following the intervention underscores the reciprocal relationship between teacher preparedness and learner outcomes. These findings are consistent with inclusive pedagogy frameworks, which posit that well-designed instructional adaptations benefit not only children with SEN but also the broader classroom community (Florian & Black-Hawkins, 2011; UNESCO, 2021). Contemporary research further emphasizes that social participation and engagement in inclusive settings

are key predictors of both socio-emotional development and academic perseverance for students with SEN (Wang et al., 2023; Rosita et al., 2024).

Recent empirical evidence supports this conclusion, indicating that classrooms led by teachers trained in differentiated instruction and inclusive behaviour management show higher levels of student participation, peer interaction, and task persistence (Savolainen et al., 2023; OECD, 2023). In early childhood contexts, differentiated and accessible pedagogies have been shown to reduce instructional barriers and increase cognitive and social engagement for learners with diverse needs. The present study contributes further evidence that early childhood settings are particularly responsive to improvements in teacher practice, given the developmental importance of early intervention and social learning.

Toward a Scalable and Sustainable Professional Development Model

The identification of key elements for a scalable and sustainable professional development model reflects both empirical evidence and practitioner insights gathered during the evaluation phase. The emphasis on modular workshops, structured mentoring, peer reflection, and phased implementation is consistent with international recommendations for system-level professional learning reform (OECD, 2020; UNESCO, 2021).

Importantly, aligning professional development initiatives with formal pre-service and in-service training pathways emerged as a critical factor for sustainability. Rather than operating as a stand-alone intervention, embedding inclusive education training within national teacher education frameworks ensures continuity, scalability, and policy coherence. This finding is particularly relevant for Malaysia as it seeks to strengthen inclusive education implementation in line with the Malaysia Education Blueprint 2013–2025.

Overall, the discussion highlights that inclusive education cannot be realised through policy mandates alone. It requires sustained investment in teacher capacity-building, supported by evidence-based professional development models that are contextually relevant and practically oriented. By addressing both teacher-level and system-level factors, this study offers a timely and empirically grounded contribution to the advancement of inclusive early childhood education in Malaysia.

8. Conclusion

This study demonstrates that a structured, context-specific professional development intervention can significantly enhance early childhood education (ECE) teachers' readiness to implement inclusive education for children with special education needs (SEN) in Malaysia. The intervention was implemented through a four-phase professional development model, comprising needs assessment, curriculum and training design, training implementation with mentoring support, and evaluation of outcomes. This four-phase model represents the methodological framework of the study, rather than a conceptual model derived from the literature, and was designed to ensure coherence between teacher needs, training content, classroom application, and outcome evaluation.

Findings from both quantitative and qualitative data indicate that teachers initially exhibited limited knowledge of inclusive practices, low confidence, and insufficient preparedness to manage inclusive classrooms. Following participation in the programme, teachers demonstrated substantial improvements in inclusive education knowledge, instructional strategies, and classroom practices, particularly in differentiated instruction, behaviour management, and the use of Individualised Education Plans (IEPs). Importantly, these improvements were not confined to teacher outcomes alone; observable gains in classroom engagement, task persistence, and peer interaction among children with SEN suggest that enhanced teacher preparedness can positively influence learner experiences in early childhood settings.

Beyond immediate training outcomes, the study identified key elements essential for a scalable and sustainable professional development model, including modular hands-on workshops, structured mentoring, peer collaboration, provision of practical teaching resources, phased implementation, and integration into pre-service and in-service teacher education pathways. These elements align with contemporary international recommendations that emphasise sustained, practice-oriented professional learning as a foundation for effective inclusive education.

In contributing empirical evidence from Malaysian early childhood contexts, this study addresses a gap in the literature and offers practical insights for policymakers, teacher education institutions, and early childhood providers. The findings suggest that inclusive education initiatives are most effective when they move beyond policy declarations and are supported by systematic investments in teacher capacity-building. Future research may extend this work by examining long-term impacts on teaching practice, learner outcomes, and the scalability

of the model across diverse educational settings. Overall, the study underscores that strengthening teacher readiness is a critical step toward achieving equitable, high-quality inclusive education in early childhood.

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