

International Journal of Learning, Teaching and Educational Research
 Vol. 25, No. 1, pp. 922-944, January 2026
<https://doi.org/10.26803/ijlter.25.1.42>
 Received Sept 18, 2025; Revised Nov 3, 2025; Accepted Dec 29, 2025

Modelling Inclusive Competence in Early Childhood Education: Evidence from Vietnam on the Roles of Professional Development and Teacher Beliefs

Dinh Thanh Tuyen 

Hanoi National University of Education, Hanoi, Vietnam

Pham Thi Thuy Hong*  and Trinh Van Ha 

The Vietnam National Institute of Educational Sciences

Abstract: This study examined how teacher Professional Development (PD) influences Inclusive Education Competence (IEC) among preschool educators, with teacher Self-Efficacy (SE) conceptualized as the sole mediating psychological mechanism. Grounded in Social Cognitive Theory and contemporary PD models, the research proposed a Structural Equation Model (SEM) in which four PD components—Training Participation, Application Opportunities, Feedback, and Programme Quality— affect IEC through SE. A cross-sectional survey was conducted with 288 preschool teachers, selected through stratified random sampling across multiple provinces in Vietnam. Data were analyzed through reliability testing, confirmatory factor analysis (CFA), and structural equation modeling (SEM). Results confirmed high internal consistency across all scales (Cronbach's $\alpha = .912-.938$), strong convergent validity ($CR > .90$; $AVE > .70$), and acceptable model fit ($CFI = .968$, $RMSEA = .051$). All PD dimensions significantly predicted SE ($\beta = .234-.407$), which in turn strongly predicted IEC ($\beta = .487$). Bootstrapping further supported the mediating role of SE. These findings underscore that teacher self-efficacy serves as a critical psychological bridge linking professional learning to inclusive instructional readiness. The study highlights the importance of well-designed, practice-oriented training programs that foster teacher confidence and inclusive competence in early childhood education, particularly within developing countries. Furthermore, it lays a foundation for future longitudinal and intervention-based studies on the effectiveness of professional development in inclusive education. SEA construct validity ($CR > .90$; $AVE > .70$).

*Corresponding author: Pham Thi Thuy Hong; hongpt@vnies.edu.vn

Keywords: early childhood education; inclusive education competence; teacher self-efficacy; professional development; structural equation modelling

1. Introduction

The development of language and communication skills during early childhood plays a critical role in shaping a child's future academic success and social integration. Language delays in early childhood have been linked to later educational and social challenges. For example, Hammer et al. (2017) showed that toddlers classified as 'late talkers' were more likely to have lower vocabulary and poorer school readiness skills at 60 months, underscoring the long-range implications of early language difficulties.).

To mitigate these risks, early language intervention has emerged as a highly effective approach for promoting more favourable developmental outcomes (Kimhi, Y., & Bar Nir, A. 2025; Park et al., 2018). Within the context of inclusive education, preschool teachers are at the forefront of delivering these interventions and fostering supportive classroom environments. Their competence in inclusive education – particularly the ability to recognise, accommodate and support children with diverse language needs – has increasingly been acknowledged as a foundational element of inclusive pedagogical practice (Amjad et al., 2023; Schaub & Lütolf, 2024).

Professional development (PD) is widely acknowledged as a key driver of inclusive teaching competence (Leatherman¹, J. M., & Niemeyer, J. A. 2005; Forlin & Sin, 2017). While effective training improves knowledge and pedagogical skills, it alone is insufficient. Translating training into inclusive practice demands psychological, contextual and instructional capacities. Prior research on teacher beliefs and self-efficacy (Schaub, S., & Lütolf, M., 2024 ; You et al., 2019) has shed light on these factors, though such studies often analyse them in isolation and lack integration with broader models of professional growth.

While prior studies have examined the influence of PD on inclusive education (e.g., Forlin, C., 2010 ; Hogan, J. A., 2025), and others have explored the role of psychosocial traits such as self-efficacy and attitudes (Schaub, S., & Lütolf, M., 2024), few have systematically investigated how these two domains interact to shape inclusive competence – particularly in early childhood education settings. Most existing models treat PD and psychosocial traits as independent predictors, leaving a critical gap in understanding their dynamic interplay and cumulative impact on inclusive teaching behaviours. Although foundational work by Pianta et al. (2017) informs our understanding of child development and ELI efficacy, the influence of teacher backgrounds, efficacy beliefs and attitudes remains underexplored in inclusive pedagogy. Moreover, comprehensive structural models examining these multidimensional links are scarce in low- and middle-income countries.

To address this gap, the present study proposes and empirically tests a structural equation model (SEM) linking PD, SE, and inclusive education competence (IEC)

among Vietnamese preschool teachers. Prior research has often examined these factors in isolation. For instance, studies have explored how PD influences attitudes (Zeng, X., & Low, H. M., 2024; Allassaf, M. A. , 2025) or how self-efficacy relates to inclusive readiness (Akie, R., Shani, M., & Weiss, I. 2022; Azevedo, H. et al, 2025), but relatively few have integrated them into a unified explanatory model. While Cadima et al. (2025) reviewed PD and inclusive attitudes, they called for more evidence on the mechanisms through which PD translates into competence.

Similarly, Amjad et al. (2023) emphasised the joint importance of attitudes and efficacy but did not test a mediation framework. Therefore, this study builds on such foundations by explicitly modelling self-efficacy as the psychological bridge through which PD – particularly in the form of early language intervention training – affects inclusive teaching competence. This approach addresses the fragmented nature of previous work and aligns with emerging calls for theory-driven, context-specific models in inclusive education research (Li, K. M., & Cheung, R. Y. M. 2021; Nguyen et al., 2024).

By contextualising the study in Vietnam, this research adds a much-needed cross-cultural perspective to the global discourse on inclusive education. Specifically, the findings reveal that among the components of PD, perceived training quality and opportunities for practical application had the strongest effects on SE, which in turn significantly predicted IEC. These results highlight the central mediating role of self-efficacy in translating PD into inclusive teaching practices. Consequently, this study contributes to theoretical frameworks by validating a parsimonious SEM model grounded in social cognitive theory, informing practical strategies by emphasising the need for culturally relevant, confidence-building PD programmes tailored to early childhood education in developing contexts.

2. Theoretical Framework

This study was anchored in a refined theoretical framework that integrates two major lines of scholarship. This study draws upon teacher PD as an approach to enhancing instructional competence and is conceptually grounded in social cognitive theory (Bandura, 1997). Specifically, teacher PD is understood here not as a singular model but as a multidimensional approach that includes Training Participation, Application Opportunities, Feedback and Programme Quality – elements shown to influence teacher outcomes (Forlin, C.,2010).

Within this theoretical framework, self-efficacy is conceptualised as the sole mediating psychological mechanism linking teacher PD experiences to IEC. This mediating role is supported by existing research emphasising the importance of efficacy beliefs in shaping inclusive teaching practices (Amjad et al., 2023; Pang et al., 2024). This targeted integration reflects a parsimonious yet theoretically grounded approach to understanding how preschool teachers develop the necessary capacities to implement inclusive educational practices – particularly for children with language and communication challenges.

2.1 Teacher Professional Development

The foundation of this study's teacher development perspective draws on Guskey's (2002) model of professional development and teacher change, which posits that sustainable changes in teacher practice are ultimately reflected in student learning outcomes, and that shifts in teachers' beliefs and attitudes are most likely to occur when they observe evidence of improved student achievement. Building on this view, more recent conceptual extensions have proposed a proximal pathway, whereby PD directly enhances teachers' pedagogical knowledge and instructional capacity – thereby shaping practice and student success (Khamzina et al., 2024).

This perspective is especially salient in early childhood inclusive education, where instructional demands are both pedagogically and emotionally complex. Research shows that structured TPD programmes can significantly improve preschool teachers' knowledge of inclusive strategies (Forlin, C., 2010) and increase awareness of diverse learner needs (Amjad et al., 2023). However, these training effects are not uniformly translated into classroom behaviour. Teachers exposed to the same PD may exhibit widely different levels of applied competence – suggesting that knowledge alone is insufficient (Balikci et al., 2025; Cadima et al., 2025).

Although foundational work by Pianta, Burchinal and Hayiou-Thomas informs our understanding of child development and ELI efficacy, the influence of teacher backgrounds, efficacy beliefs and attitudes remains underexplored in inclusive pedagogy. Prior studies have often focused on these factors in isolation, limiting our understanding of how PD translates into actual classroom competence. This gap is especially evident in early childhood settings within under-researched cultural contexts such as Vietnam, where systemic and psychosocial variables may interact differently. Comprehensive structural models examining these multidimensional pathways remain scarce in low- and middle-income countries. To address this limitation, we focus on self-efficacy as the internal mechanism that mediates the impact of PD on inclusive teaching outcomes.

2.2 Psychosocial Mediator: Teacher Self-Efficacy

Our model positions self-efficacy, drawn from Bandura's (1977) social cognitive theory, as the core psychological construct mediating the relationship between training and applied inclusive competence. In this context, self-efficacy refers to a teacher's belief in their ability to plan, implement and adapt inclusive practices for children with diverse language needs.

Teachers with high levels of self-efficacy are more likely to persist through instructional challenges, experiment with adaptive strategies, and embrace inclusion as both feasible and valuable (Hacıbrahimoglu, 2022; Schaub, S., & Lütolf, M., 2024). Conversely, even well-trained teachers may fail to apply inclusive practices effectively if they lack confidence in their ability to do so (Akıe, R., Shani, M., & Weiss, I. 2022; Azevedo, H. et al, 2025). Empirical studies have validated this mediating effect. For example, Park et al. (2018) demonstrated that teacher confidence mediated the relationship between professional background variables and concerns about inclusion. Similarly, You et al. (2019) found that

teachers' efficacy beliefs were strong predictors of their inclusive attitudes and behaviours.

Therefore, in the current model, we conceptualise self-efficacy not as a byproduct but as a central transmission mechanism that transforms PD inputs into observable behavioural outcomes. This streamlined theoretical proposition reflects both empirical rigour and practical simplicity, enhancing the model's testability and relevance in diverse educational contexts such as Vietnam.

2.3 Proposed Structural Model to be Validated

Building upon the synthesised theoretical foundations, this study proposes a SEM developed for empirical validation. The model specifies the directional pathways linking PD, teacher self-efficacy (SE), and IEC. It conceptualises four dimensions of PD – Training Participation, Application Opportunities, Feedback and Programme Quality – as exogenous variables that influence IEC indirectly through the mediating mechanism of SE. The hypothesised structural relationships are illustrated in Figure 1.

2.4 Professional Development as an Exogenous Variable

Professional development (PD) is conceptualised as a multifaceted construct encompassing Training Participation, Application Opportunities, Feedback and Programme Quality. Rooted in Guskey's framework (2002) and extended by Desimone and Garet (2015), PD is posited as the initial driver that enhances teacher knowledge and pedagogical skills.

Table 1: Sample Items for Professional Development

Item	Source
I have participated in early language intervention training programmes.	Zhao et al. (2025)
I have had opportunities to apply the knowledge and skills gained from professional development training in my classroom practice.	Donath (2025); Montalbano (2024)
I regularly receive constructive feedback and opportunities for reflection following professional development activities.	Darling-Hammond et al. (2017)
Participation in professional development has increased my confidence to support learners with diverse language and learning needs.	Hogan et al. (2025); Darling-Hammond et al. (2017)
The training programmes at my workplace are of high quality.	Amjad et al. (2023); Adapted

These items, adapted from previous validated scales (e.g., Azevedo, H et al., 2025, Donath, 2025; Montalbano, 2024; Hogan et al., 2025; Darling-Hammond et al., 2017; Zhao et al., 2025), were modified to measure the extent, quality and

practical integration of training into early childhood teaching within the Vietnamese preschool context.

2.5 Teacher Self-Efficacy as Mediator

Teacher SE, informed by Bandura's social cognitive theory (1977), is defined as educators' beliefs in their capacity to manage inclusive classrooms and support diverse learners. SE functions as the key psychological mechanism transforming training into actionable, inclusive practice.

Table 2: Sample Items for Teacher Self-Efficacy

Item	Source
I feel confident in my ability to implement inclusive teaching practices effectively in my classroom.	Long (2025)
I can adapt my teaching strategies to meet the diverse language needs of children.	Long (2025) Adapted
I have the skills to implement appropriate language intervention strategies.	Long (2025) Adapted
I believe I can improve children's language abilities through my daily instruction.	Long (2025) Adapted

These items, adapted from validated instruments (e.g., Malinen et al., 2013; Muhammad, 2025), were contextualised to reflect both cognitive and behavioural aspects of teacher efficacy specifically within early childhood inclusive settings in Vietnam, by adjusting the language to local terminology and ensuring cultural relevance in classroom practices.

2.6 Inclusive Education Competence as Outcome

Inclusive education competence (IEC) refers to a teacher's ability to combine inclusive knowledge, positive attitudes and instructional skills in real-world early childhood settings. Consistent with prior conceptualisations (e.g. Pang et al., 2024), this study consolidates IEC as a multidimensional outcome construct that reflects both cognitive and practical readiness for inclusive teaching.

Table 3: Sample Items for Inclusive Education Competence

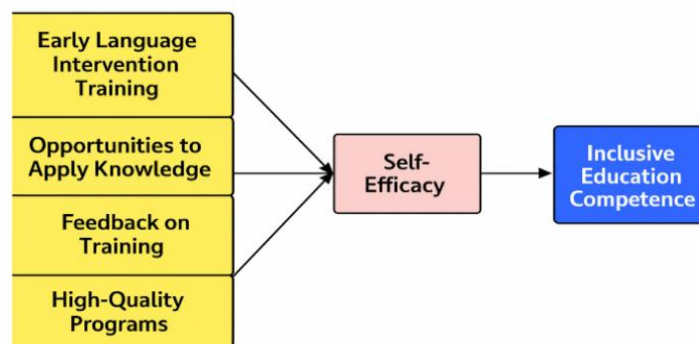
Dimension	Item	Source
Knowledge	I can identify children with language difficulties.	Zhao et al. (2025)
	I have knowledge of core principles in early language intervention.	Long (2025) Adapted
Attitudes	I believe children with speech delays should learn in general classrooms.	Hogan (2022)
	I feel comfortable working with children with communication difficulties.	Donath (2025); Montalbano (2024)
	I believe teachers can support such children if given proper training.	Pang et al. (2024)
	Inclusive education is appropriate for children with language delays.	Charitaki et al. (2024)
Skills (Instructional)	I can design learning activities that support children's language development.	Pang et al. (2024)
	I can evaluate the language progress of children over time.	Adapted
	I feel confident using appropriate language techniques with children with special needs.	Adapted

The IEC construct captures the full spectrum of inclusive teaching: understanding, belief and action. This comprehensive structure ensures that competence is not reduced to technical knowledge alone but incorporates essential affective and practical elements. The items were adapted from previous validated studies (e.g. Charitaki et al., 2024; Jiao et al., 2022; Pang et al., 2024) to fit the Vietnamese early childhood education context by rewording language examples, aligning scenarios with local classroom practices, and consulting with early childhood education experts to ensure cultural and pedagogical relevance.

Table 4: Summary of Constructs and Representative Items

Construct	Subdimensions	Example Item	Key Sources
Professional Development	Training, feedback	"I have participated in early language intervention training programmes."	Zhao et al. (2025), Donath (2025); Montalbano (2024), Hogan et al. (2025); Darling-Hammond et al. (2017)
Teacher Self-Efficacy	Instructional confidence	"I feel confident supporting children with language delays."	Schaub, S., & Lütolf, M. (2024)
Inclusive Education Competence	Knowledge, Attitudes, Skills	"I can design activities that support children's language development."	Pang et al. (2024), Charitaki et al. (2024), Jiao et al. (2022)

This model differs from prior frameworks by emphasising teacher SE as the core mediator and aligning constructs with the contextual demands of early childhood education in developing regions.

**Figure 1: Proposed Structural Model for Pathways to Inclusive Education Competence**

This model illustrates the hypothesised relationships between PD, psychosocial factors (SE and attitudes), intervention competence (knowledge and skills), and teachers' overall competence in inclusive education. To operationalise these constructs, items were drawn from validated instruments in existing research. The sources contributing to the scale construction are outlined below.

Table 5: Sources Informing Construct Operationalisation

Source	Contribution to Scale Development	Corresponding Construct in the Model
Zhao et al. (2025)	Participation in early language intervention training programmes	Professional Development (Independent Variable)
Donath (2025); Montalbano (2024)	Opportunities to apply training in the classroom; positive attitudes towards inclusion	Professional Development; Attitudes
Weber & Greiner (2019)	Regular feedback following training sessions	Professional Development
Hogan et al. (2025); Darling-Hammond et al. (2017))	Training enhances teacher confidence in language intervention	Professional Development
Amjad et al. (2023)	TPD increases awareness of inclusive education practices	Professional Development
Sharma et al. (2012)	Teachers' self-efficacy in managing diverse learning needs	Self-Efficacy (Mediator)
Hogan et al. (2025)	Skills in implementing appropriate language intervention strategies	Self-Efficacy (Mediator)
Schaub, S., & Lütolf, M. (2024)	Self-efficacy strongly predicts inclusive education competence	Self-Efficacy (Mediator)

2.7 Research Hypotheses

Based on the proposed conceptual model, the following hypotheses were formulated:

- **H1:** Training participation positively predicts teacher self-efficacy.
- **H2:** Application opportunities positively predict teacher self-efficacy.
- **H3:** Feedback positively predicts teacher self-efficacy.
- **H4:** Programme quality positively predicts teacher self-efficacy.
- **H5:** Teacher self-efficacy positively predicts inclusive education competence and mediates the relationship between professional development and inclusive competence.

3. Methodology

3.1 Research Design

This study adopted a quantitative, cross-sectional survey design to empirically examine and map the pathways through which preschool teachers' PD contributes to their IEC, mediated by SE. Structural Equation Modelling (SEM) was selected as the primary analytical method due to its robustness in handling latent constructs and mediation pathways, which allows for the simultaneous

estimation of multiple interrelated variables – a critical requirement when testing theory-driven models such as those examining teacher competence in inclusive settings. This methodological approach is widely recognised in educational research for validating complex models involving psychological constructs (You, S., Kim, E. K., & Shin, K. 2019; Paulus R. Tuerah, 2025).

3.2 Participants and Sampling

The target population comprised in-service preschool teachers working at public and private early childhood education institutions across diverse regions in Vietnam. A non-probability purposive sampling strategy was employed, using specific inclusion criteria, such as current employment in a public or private preschool, a minimum of one year of teaching experience, and involvement in classrooms with children aged 3–5 years. This approach ensured diversity in teaching contexts (e.g. urban vs. rural, public vs. private) and demographic profiles (e.g. age, qualifications, teaching tenure). Teachers were invited via professional networks, training institutions and local education departments.

The minimum sample size was calculated based on recommendations by Hair et al. (2019), using a 10:1 ratio of observations to estimated parameters. Given the number of indicators and latent variables in the proposed model, a minimum sample size of 300 participants was deemed appropriate to ensure robust SEM estimation. Ultimately, data were collected from 288 preschool teachers across multiple provinces in Vietnam. While slightly below the ideal threshold, this sample size is still acceptable for SEM, particularly when model complexity is moderate and data quality is high (Hair et al., 2019).

3.3 Instrument Development and Validation

Table 6: The Survey Instrument Comprised Three Major Constructs Aligned with the Proposed Model

Construct	Role	Description
Professional Development	Exogenous Variable (IV)	Experiences with training, perceived quality, applicability and support mechanisms
Teacher Self-Efficacy	Mediator	Beliefs in one's ability to support inclusive learning environments
Inclusive Education Competence	Dependent Variable (DV)	Teachers perceived competence in knowledge, attitudes and practices for inclusive instruction

Each construct was operationalised through 5–7 items, measured on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

3.4 Item Development Process

Phase 1: Theoretical foundation and item pool construction

Items were derived from internationally validated instruments and adapted to the Vietnamese preschool context. Table 7 presents the mapping of each subdimension with representative items and key sources.

Table 7: Sources and Theoretical Mapping of Survey Items

Construct	Subdimension	Sample Item	Source
Professional Development	Training Experience	"I have attended inclusive education training in the past 12 months."	Zhao et al. (2025)
	Training Quality	"The training content was relevant to preschool classrooms."	Donath (2025); Montalbano (2024); Hogan et al. (2025); Darling-Hammond et al. (2017)
	Applicability	"I can apply training knowledge in my classroom."	Forlin, C. (2010)
	Support and Feedback	"I received expert feedback after the training."	Cadima et al. (2025)
Teacher Self-Efficacy	Inclusive instruction	"I am confident in supporting children with language difficulties."	Hogan, J. A. (2025)–Teacher Efficacy for Inclusive Practices (TEIP)
	Adaptive strategies	"I can adjust teaching to meet diverse learning needs."	Schaub, S., & Lütolf, M. (2024)
Inclusive Education Competence	Knowledge	"I understand key principles of inclusive early language intervention."	Pang et al. (2024), Zhao et al. (2025)
	Skills	"I can design inclusive language development activities."	Tjernberg (2023)
	Attitudes	"Children with speech delays should be included in regular classrooms."	Park et al. (2018)

Only items with documented validity (Cronbach's $\alpha \geq .70$) and alignment with early childhood inclusive education were retained.

Phase 2: Translation and cultural adaptation

A rigorous back-translation procedure was conducted to ensure the linguistic accuracy and cultural relevance of the instrument. The initial forward translation was conducted by a bilingual expert in early childhood education. An independent linguist unfamiliar with the original items then performed the back-translation. Discrepancies between versions were reviewed and reconciled by a panel consisting of an educational psychologist, a linguist and a preschool curriculum specialist. The final version was reviewed and refined through piloting with preschool teachers in Hanoi to ensure clarity and contextual relevance.

Phase 3: Pilot reliability testing

A pilot reliability analysis was conducted to assess the internal consistency of the measurement instruments using Cronbach's Alpha. All scales demonstrated excellent reliability, with alpha values ranging from .919 to .951 – well above the .70 threshold recommended by Nunnally and Bernstein (1994). Corrected item-total correlations exceeded .40, indicating that each item was appropriately aligned with its respective construct. Specifically, the reliability coefficients were as follows: Training Participation (TP) = .930, Application of Knowledge (AP) = .921, Feedback (FB) = .951, Training Quality (QL) = .948, SE = .924, and IEC = .919. These findings confirm that the items reliably measured each construct and exhibited strong internal coherence. In addition, qualitative feedback from pilot participants supported the clarity and contextual relevance of the items, noting that they accurately reflected the realities and professional experiences of early childhood educators. This feedback reinforced confidence in the instrument's suitability for full-scale data collection.

4. Data Collection

The data were collected over two months from April to May 2024. The final version of the questionnaire was developed based on validated scales from prior research, adapted for the context of Vietnamese early childhood education. The instrument consisted of four sections: demographic information, PD, teacher SE and IEC. Each construct was measured using multiple Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree).

Data collection employed a mixed-mode strategy to enhance accessibility and participation. Specifically, the survey was distributed through both online platforms (Google Forms) and printed paper-based forms. This dual approach allowed the inclusion of respondents from both urban and rural areas across five provinces in Vietnam. Participants were in-service preschool teachers recruited through local education departments and professional networks. Prior to participation, informed consent was obtained and respondents were assured of confidentiality and voluntary involvement. Ethical clearance for the study was granted by the Institutional Review Board of Hanoi National University of Education.

4.1 Data Analysis

The data analysis followed a rigorous three-step procedure to ensure psychometric soundness and theoretical alignment. First, descriptive statistics and reliability analyses were conducted. All subscales exhibited excellent internal consistency, with Cronbach's Alpha values exceeding .90.

Second, confirmatory factor analysis (CFA) was conducted using AMOS 24.0 to evaluate the measurement model. Each latent construct demonstrated strong construct validity ($CR > .90$), average variance extracted ($AVE > .70$) and acceptable discriminant validity. Model fit indices ($CFI = .970$, $RMSEA = .050$) indicated good overall model fit, affirming the structural integrity of the measurement instrument.

Third, SEM was employed to test the proposed mediation model, wherein SE served as the sole mediator between PD dimensions and IEC. All direct paths were statistically significant, and bootstrapping (5,000 samples) confirmed the mediating effects. This analytic strategy provides a robust framework for validating the hypothesised model, offering empirical insights into how professional learning and psychological mechanisms jointly shape inclusive education readiness among preschool teachers in Vietnam.

4.2 Research Findings

The data analysis was conducted in a structured three-phase sequence to ensure psychometric soundness and model validation. Each stage yielded critical insights into the measurement robustness and theoretical pathways linking PD to IEC.

4.2.1 Descriptive and Reliability Analysis

Initial analyses confirmed high internal consistency across all core constructs, as shown in Table 8. All constructs exhibited excellent reliability, with Cronbach's Alpha values exceeding the threshold of 0.90 (Nunnally & Bernstein, 1994). The PD subscale ($\alpha = 0.938$) demonstrated particularly high internal consistency across its 20 items, with item-total correlations ranging from .52 to .83. Both the SE and IEC constructs also met high reliability standards ($\alpha = 0.912$ and 0.920 , respectively), indicating coherent measurement and minimal redundancy across items. These results affirmed that the developed scale is psychometrically sound for use in subsequent confirmatory and structural modelling analyses.

Table 8: Descriptive Statistics and Reliability

Construct	No. of Items	Cronbach's Alpha	Item-Total Correlation Range
Professional Development (PD)	20	0.938	.52 –.83
Teacher Self-Efficacy (SE)	4	0.912	.68 –.78
Inclusive Education Competence (IEC)	9	0.920	.64 –.81

4.2.2 Confirmatory Factor Analysis (CFA)

(see Figure 2).

Confirmatory Factor Analysis (CFA) demonstrated strong construct validity, with satisfactory reliability, convergent, and discriminant validity across all constructs (see Table 9 and Figure 2 for detailed results).

Table 9: Confirmatory Factor Analysis (CFA) Results

Construct	CR (Composite Reliability)	AVE (Average Variance Extracted)	Model Fit Indices
Professional Development (PD)	0.937	0.714	CFI = 0.970, RMSEA = 0.050, SRMR $\approx$ 0.06
Teacher Self-Efficacy (SE)	0.913	0.723	
Inclusive Education Competence (IEC)	0.921	0.703	

To validate the measurement model, a CFA was conducted using AMOS 24.0. As shown in Table 2, all three latent constructs demonstrated acceptable to excellent psychometric properties. CR values exceeded the recommended cutoff of 0.70 (Fornell & Larcker, 1981), ranging from 0.913 (SE) to 0.937 (PD). AVE values were above the 0.50 threshold, supporting convergent validity.

Global model fit indices also met conventional standards: CFI = 0.970, RMSEA = 0.050, and SRMR $\approx$ 0.06, confirming a good model-data fit (Hu & Bentler, 1999). Factor loadings for all observed variables were statistically significant ($p < .001$) and exceeded 0.60. These results collectively indicated that the measurement model provides a robust representation of the latent constructs, justifying the use of these factors in subsequent SEM analyses.

Figure 2 presents the results of the CFA, illustrating the standardised factor loadings and the structural integrity of the measurement model.

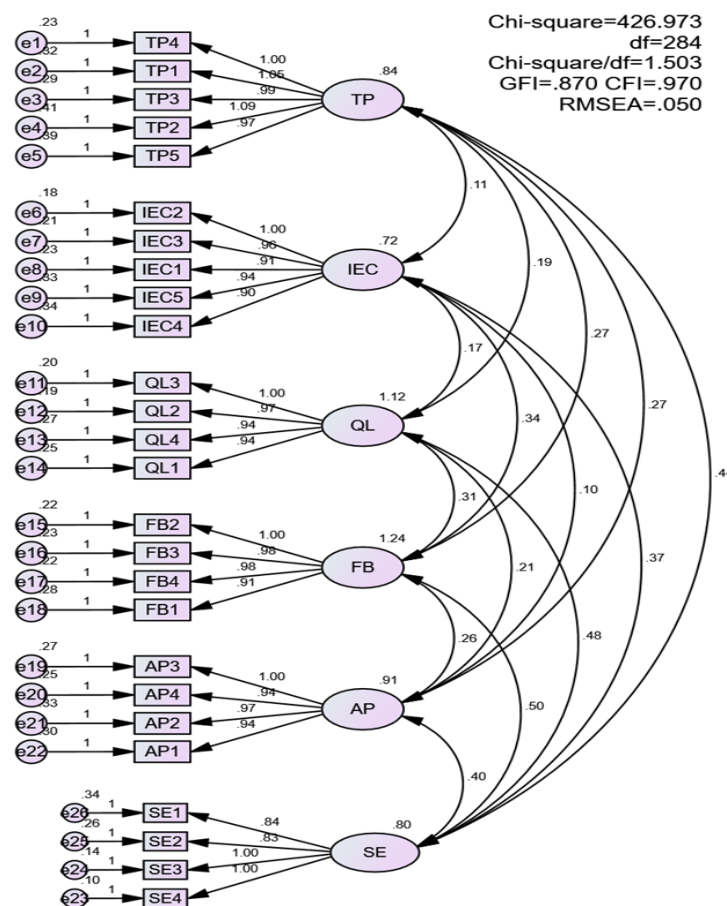


Figure 2: Confirmatory Factor Analysis Model with Standardised Loadings

The CFA yielded strong evidence for the construct validity of the measurement model. Key fit indices demonstrated acceptable to excellent model fit: $\chi^2/df = 1.503$, CFI = 0.970, and RMSEA = 0.050, with only a slightly below-threshold Goodness-of-Fit Index of 0.870 – an acceptable outcome given model complexity and sample size. All standardised factor loadings exceeded 0.83, with many items loading above 0.90, indicating high levels of convergent validity across all constructs. The latent factors – including four subdimensions of PD (Training Participation, Application Opportunities, Feedback and Programme Quality, SE and IEC – were well-represented by their respective items, with minimal cross-loading. These findings confirmed that the measurement structure is both theoretically grounded and empirically robust, thus providing a reliable foundation for subsequent structural modelling.

4.2.3 Structural Equation Modelling (SEM)

.... into inclusive instructional competence.

As confirmed by the SEM results (Table 10, Figure 3), self-efficacy fully mediated the relationship between professional development and inclusive education competence.

Table 10: Structural Equation Modelling (SEM) Results

Path	Standardised Estimate (β)	Significance (p)
PD1 $\rightarrow$ SE	0.234	<.001
PD2 $\rightarrow$ SE	0.351	<.001
PD3 $\rightarrow$ SE	0.407	<.001
PD4 $\rightarrow$ SE	0.286	<.001
SE $\rightarrow$ IEC	0.487	<.001
Indirect Effects (PD $\rightarrow$ SE $\rightarrow$ IEC)	Significant (Bootstrapped)	<.01

Structural equation modelling (SEM) was conducted to examine the proposed mediation model, with SE as the sole psychological mediator between PD and IEC. All four PD components – Training Participation, Application Opportunities, Feedback and Programme Quality – had significant direct effects on SE ($\beta = 0.234$ to 0.407 , $p < .001$). In turn, SE significantly predicted IEC ($\beta = 0.487$, $p < .001$), indicating that higher self-efficacy fosters greater inclusive competence.

Bootstrapping analysis (5,000 samples) confirmed the significance of the indirect effects, reinforcing the mediating role of SE. These findings affirmed the structural validity of the proposed model and highlighted the central role of self-efficacy in bridging professional learning and inclusive teaching capacity. The final SEM model illustrated both direct and mediated pathways, offering empirical support for the psychological mechanisms linking PD efforts to inclusive educational outcomes in early childhood settings (see Figure 3).

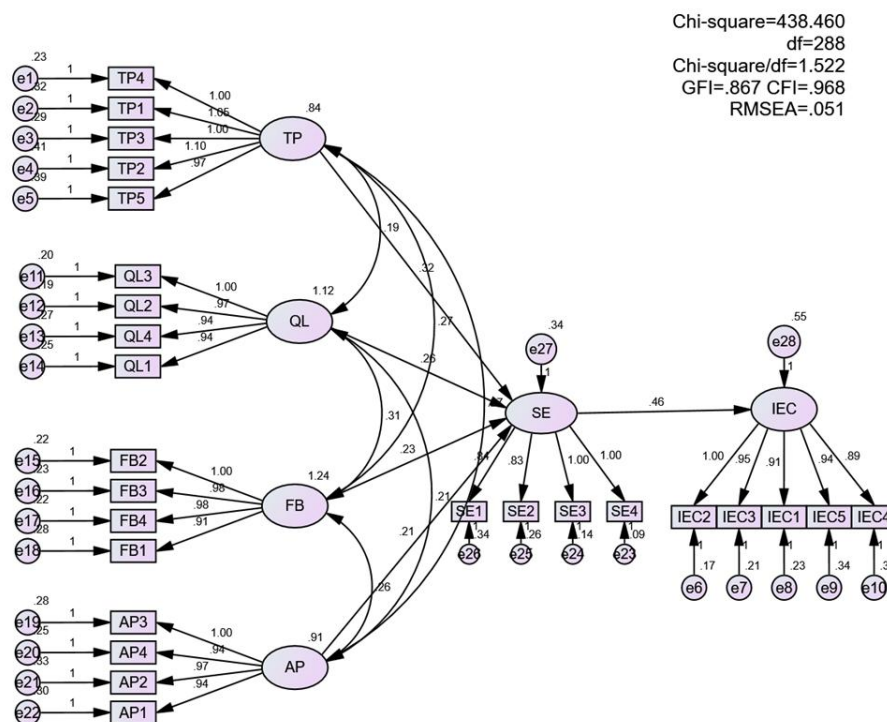


Figure 3: Structural Equation Model with Path Coefficients and Mediation Effects

The SEM results provided robust support for the hypothesised mediation model. Model fit indices met accepted standards ($\chi^2/df = 1.522$, CFI = 0.968, RMSEA = 0.051, GFI = 0.867), indicating a satisfactory fit despite moderate model complexity. All four components of teacher PD – Training Participation, Application Opportunities, Feedback and Programme Quality – exerted significant positive effects on SE, with standardised coefficients ranging from $\beta = .21$ to $.32$. Among these, Programme Quality (QL) emerged as the strongest predictor ($\beta = .32$), underscoring the critical role of training quality in shaping efficacy beliefs.

Teacher Self-Efficacy (SE), in turn, significantly predicted IEC ($\beta = .46$), supporting its function as a partial mediator. These findings suggest that while PD directly enhances inclusive competence, its effects are more impactful when mediated through improved SE, affirming the theoretical view that internal psychological processes are central to translating PD into inclusive classroom practices.

5. Discussion

This study examined how different dimensions of PD influence preschool teachers' IEC, with SE as a mediating factor. The results validated a context-specific SEM and contributed new evidence to the inclusive education literature, especially in developing countries such as Vietnam.

5.1 Summary of Major Findings

The study confirmed all hypothesised relationships (H1–H5). First, all four dimensions of PD – Training Participation, Application Opportunities, Feedback and Programme Quality – had significant positive effects on SE. Training quality showed the strongest effect ($\beta = .32$), highlighting its role in shaping teachers' professional beliefs and behaviours. Second, SE fully mediated the relationship between PD and IEC. These results are consistent with prior research emphasising the impact of PD on teacher outcomes (Amjad et al., 2023; Weber & Greiner, 2019) and the role of self-efficacy as a predictor of inclusive competence (Charitaki et al., 2024; Jiao et al., 2022). Compared to aggregated PD measures in previous models (e.g. Zhao et al., 2025), this study offers a more refined and differentiated analysis.

5.2 Interpretation of Findings

The findings supported Bandura's (1997) social cognitive theory, particularly the idea that mastery experiences and feedback foster teacher confidence. By showing that PD enhances IEC primarily through improved SE, the results suggested that teacher learning is not only about content delivery but also about shaping beliefs and motivation. This is particularly relevant in high power-distance and collectivist cultures like Vietnam, where teachers may rely heavily on top-down guidance and may benefit from programmes that enhance their agency and autonomy. The full mediation observed in H5 implies that effective PD must go beyond knowledge transfer to actively cultivate psychological readiness.

5.3 Implications for Theory, Policy and Practice

Theoretically, this study refined existing PD models by introducing SE as a central mechanism for translating training into inclusive practices. This approach advanced earlier frameworks (e.g. Donath, 2025; Montalbano, 2024; Hogan et al., 2025; Darling-Hammond et al., 2017) by empirically confirming the pathway through which PD influences IEC. From a policy and practice perspective, the results underscore the need for localised, competency-based PD that is iterative and feedback-driven. Teacher education programmes, especially in early childhood education, should integrate classroom-based simulations, mentoring and reflective activities. Furthermore, policies should recognise that building teacher capacity requires attention not just to technical knowledge but also to psychological empowerment. These insights are especially significant for low-

and middle-income countries, where systemic barriers may limit the implementation of inclusive policies. In such contexts, enhancing teachers' confidence and belief in their ability to teach inclusively can serve as a critical buffer against structural limitations.

6. Limitations and Recommendations

While the study contributed meaningful insights, several limitations should be acknowledged. First, its cross-sectional design restricted causal inference. Longitudinal studies were recommended to assess the temporal stability and long-term effects of PD on IEC. Second, the use of self-report measures may introduce bias, though the high internal consistency and model fit mitigate this concern. Third, the study focused on early childhood teachers in Vietnam, which may limit generalisability. Future research should replicate the model in diverse educational systems to enhance external validity.

Importantly, the current manuscript has clarified the theoretical assumptions into five hypotheses (H1–H5), allowing readers to validate the findings based on clear, testable claims. Future manuscripts will present these hypotheses explicitly in the introduction for greater coherence and alignment with academic expectations.

7. Conclusion and Limitations

This study investigated how PD influences IEC among Vietnamese preschool teachers, with SE serving as the sole mediating psychological mechanism. The validated SEM offers empirical evidence that different dimensions of PD – particularly training quality and application opportunities – significantly shape teachers' confidence in inclusive practice, which in turn determines their readiness to support language-diverse learners in early childhood settings.

By integrating social cognitive theory into the early education context, this study contributed a streamlined yet robust framework to the literature on teacher learning and inclusive pedagogy. The results emphasised that PD is most effective when it is not only content-rich but also psychologically empowering. The central role of self-efficacy as a mediator confirms that internal beliefs act as the bridge between professional learning and behavioural change in the classroom.

These findings hold practical relevance for policymakers and education leaders in developing contexts. Designing PD programmes that are interactive, feedback-oriented and contextually grounded can enhance both technical competence and personal agency among teachers. The model also underscores the need to consider psychological factors as essential components of teacher development frameworks – particularly in systems where inclusive education is still emerging.

However, several limitations should be acknowledged. First, the cross-sectional design restricts causal interpretation. Future studies should adopt longitudinal or quasi-experimental designs to examine how teacher beliefs and competencies evolve over time. Second, reliance on self-reported data may introduce bias; combining surveys with qualitative interviews or observational methods could provide richer insights. Third, although the sample was geographically diverse

within Vietnam, the findings may not generalise to other cultural or educational systems without further validation.

Moving forward, researchers should explore the scalability of this model across different contexts through intervention-based and mixed-methods studies. Investigating how sociocultural variables – such as institutional climate, peer collaboration or community expectations – interact with training effects could deepen understanding and inform more adaptive PD designs. Ultimately, this study lays the groundwork for building sustainable, culturally responsive teacher development strategies that bridge policy aspirations with classroom realities in inclusive early education.

Funding Statement

This research was supported by the Ministry of Education and Training of Vietnam under the Ministry-Level Research Project titled “Developing a Positive Support Programme for Children with Speech Delays Aged 18–36 Months in Preschools” (Grant Code: B2024_SHP-02).

Acknowledgements

During the preparation of this work, the author(s) used ChatGPT (ChatGPT, OpenAI) to improve the clarity and language of some English sentences. After using this tool, the authors reviewed and edited the content carefully and take full responsibility for the intellectual content of the article.

8. References

- Akie, R., Shani, M., & Weiss, I. (2022). Teachers' self-efficacy and attitudes toward inclusive education: A meta-analytic review. *Teaching and Teacher Education*, 108, 103522. <https://doi.org/10.1016/j.tate.2021.103522>
- Alassaf, M. A. (2025). Teachers' knowledge and attitudes toward inclusive education: The role of professional development. *Frontiers in Education*, 10, 1630710. <https://doi.org/10.3389/feduc.2025.1630710>
- Amjad, A. I., Batool, N., & Tabassum, U. (2023). Modulating inclusive education in early childhood: The role of teachers' attitude and self-efficacy in shaping their awareness and readiness. *Journal of Early Childhood Care and Education*, 7(2). <https://www.researchgate.net/publication/378306753>
- Azevedo, H., Barat, B., Coelho, V., Machado, F., Soares, M., Dias, P., Cadime, I., & Peixoto, C. (2025). Exploring teachers' attitudes towards inclusive education: role of self-efficacy and perceived school climate. *Journal of Research in Special Educational Needs*, 25(4), 1002–1020. <https://doi.org/10.1111/1471-3802.70025>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company.
- Barmola, K., & Barmola, M. (2022). Influence of training and work experience on teachers' attitudes towards inclusive education. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2022.2104523>
- Balikci, S., Gulboy, E., & Rakap, S. (2025). Early childhood administrators' attitudes towards inclusive education: A systematic review. *Education Sciences*, 15(6), 734. <https://doi.org/10.3390/educsci15060734>
- Batu, P., & Arslan, A. A. (2021). The mediating role of self-efficacy on the relationship between psychological capital and attitudes towards inclusive education. *European Journal of Special Needs Education*. <https://doi.org/10.1080/08856257.2021.1963968>

- Bravo-Moya, J., & Soriano-Díaz, A. (2023). Professional development and attitudes of early childhood teachers towards inclusive education: A systematic review. *Early Childhood Education Journal*. <https://doi.org/10.1007/s10643-023-01490-5>
- Cadima, J., Ferreira, T., Guedes, C., Alves, D., Grande, C., & Leal, T. (2025). Does support for professional development in early childhood and care settings matter? A study in four countries. *Early Childhood Education Journal*, 53, 1181–1193. <https://doi.org/10.1007/s10643-024-01669-x>
- Chu, S. M., & Wong, K. F. (2021). Teachers' attitudes and efficacy for inclusive education in Hong Kong: A systematic review. *International Journal of Educational Research*. <https://doi.org/10.1016/j.ijer.2021.101831>
- Forlin, C., & Sin, K. F. (2017). Enhancing the professional development of preschool teachers to support inclusive education in Singapore. *Journal of Research in Special Educational Needs*. <https://doi.org/10.1111/1471-3802.12351>
- Forlin, C. (2010). Teacher education reform for enhancing teachers' preparedness for inclusion. *International Journal of Inclusive Education*, 14(7), 649–653. <https://doi.org/10.1080/13603111003778353>
- Hacıbrahimoglu, B. Y. (2022). Early childhood pre-service teachers' self-efficacy in inclusive education: A mixed methods investigation. *Issues in Educational Research*, 32(2). <https://www.iier.org.au/iier32/yildirim-haciibrahimoglu.pdf>
- Hammer, C. S., Morgan, P., Farkas, G., Hillemeier, M., Bitetti, D., & Maczuga, S. (2017). Late Talkers: A Population-Based Study of Risk Factors and School Readiness Consequences. *Journal of speech, language, and hearing research : JSLHR*, 60(3), 607–626. https://doi.org/10.1044/2016_JSLHR-L-15-0417
- Hogan, J. A. (2025). Developing inclusive educators: Analyzing the effectiveness of professional development for inclusive education. **Education Sciences*, 15*(5), 578. <https://doi.org/10.3390/educsci15050578>
- Hao, M., Li, X., & Li, M. (2022). The influence of professional development on Chinese kindergarten teachers' attitudes toward inclusion. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2022.981258>
- Jiang, J., & Zhang, H. (2020). The relationship between school climate, self-efficacy, and attitudes toward inclusive education: A study of Chinese preschool teachers. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2020.1772648>
- Kimhi, Y., & Bar Nir, A. (2025). Teacher training in transition to inclusive education. *Frontiers in Education*, 10, Article 1510314. <https://doi.org/10.3389/feduc.2025.1510314>
- Khamzina, K., Stanczak, A., Brasselet, C., Desombre, C., Legrain, C., Rossi, S., Guirimand, N., & Cilia, F. (2024). Designing effective pre-service teacher training in inclusive education: A narrative review of the effects of duration and content delivery mode on teachers' attitudes toward inclusive education. *Educational Psychology Review*, 36(1), 13. <https://doi.org/10.1007/s10648-024-09851-8>
- Leatherman1, J. M., & Niemeyer, J. A. (2005). Teachers' Attitudes Toward Inclusion: Factors Influencing Classroom Practice. *Journal of Early Childhood Teacher Education*, 26(1), 23–36. <https://doi.org/10.1080/10901020590918979>
- Lee, M. K., & Lim, H. J. (2019). The relationship between pre-service early childhood teachers' beliefs and concerns about inclusive education: A structural equation model analysis. *Journal of Research in Childhood Education*. <https://doi.org/10.1080/02568543.2019.1678145>
- Li, K. M., & Cheung, R. Y. M. (2021). Pre-service teachers' self-efficacy in implementing inclusive education in Hong Kong: the roles of attitudes, sentiments, and concerns. *International Journal of Disability, Development and Education*, 68(2), 259–269. <https://doi.org/10.1080/1034912X.2019.1678743>

- Long, Y. (2025). *Teachers' attitudes and self-efficacy toward inclusive education practices*. *Journal of Inclusive Education Studies*. <https://doi.org/10.1080/2331186X.2025.2526872> TandF Online
- Nguyen, L. D., Nguyen, V. H., & Pham, T. L. (2023). Factors influencing Vietnamese preschool teachers' readiness for inclusive education: A structural equation modeling approach. *Early Childhood Education Journal*. <https://doi.org/10.1007/s10643-023-01438-9>
- Nguyen, M.-T., Mai, H.-A., & Tran, T.-T. (2024). Dataset of Vietnamese preschool teachers' readiness towards teaching mathematics through experiential education. *Data in Brief*, 55, 110670. <https://doi.org/10.1016/j.dib.2024.110670>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- Odom, S. L., & Buysse, V. (2019). Teacher training in inclusive early childhood education: A review of the research. *Early Childhood Research Quarterly*. <https://doi.org/10.1016/j.ecresq.2019.01.002>
- Pang, F., Yang, L., Tse, C. Y., & Sin, K. F. (2024). Assessing the relationship between teacher inclusive beliefs, behaviors, and competences of students with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 55(10), 3631–3646. <https://doi.org/10.1007/s10803-024-06473-5>
- Park, M. H., Dimitrov, D. M., & Park, D. Y. (2018). Effects of background variables of early childhood teachers on their concerns about inclusion: The mediation role of confidence in teaching. *Early Childhood Education Journal*, 46(5), 549–559. <https://doi.org/10.1080/02568543.2017.1417926>
- Paulus R. Tuerah (2025). Teacher professional development in implementing inclusive education practices – NALURI EDUKASI Jurnal Pendidikan.
- Podell, D. M., & Soodak, L. C. (2015). Professional development in inclusive education: A structural equation model. *Journal of Educational Research*. <https://doi.org/10.1080/00220671.2015.1054321>
- Ruys, I., Van der Vleuten, C., & Van der Schaaf, M. (2016). The effectiveness of an inclusive education training program for pre-service teachers. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2015.1064883>
- Schaub, S., & Lütolf, M. (2024). Attitudes and self-efficacy of early childhood educators towards the inclusion of children with disability in day-care. *European Journal of Special Needs Education*, 185–200. <https://doi.org/10.1080/08856257.2023.2200106>
- Sharma, U., Loreman, T., & Forlin, C. (2012). Measuring teacher efficacy to implement inclusive practices. *Journal of Research in Special Educational Needs*, 12(1), 12–21. <https://doi.org/10.1111/j.1471-3802.2011.01200.x>
- Sharma, U., & Saggars, B. (2018). The role of professional development in building inclusive classroom practices. *International Journal of Inclusive Education*. <https://doi.org/10.1080/13603116.2018.1527632>
- Sun, H., & Zhou, Y. (2022). The relationship between teacher professional development and inclusive attitudes: A path analysis. *Frontiers in Psychology*. <https://doi.org/10.3389/fpsyg.2022.845678>
- Tjernberg, C. C. (2023). Teachers' perspectives on supportive and inclusive literacy practices. *Nordic Journal of Literacy Research*, 9, 1–18. <https://nordicliteracy.net/index.php/njlr/article/view/3610/9268>
- Weber & Greiner (2019), T. R. (2002). *Professional development and teacher change*. *Teachers and Teaching: Theory and Practice*, 8(3/4), 381–391. <https://doi.org/10.1080/135406002100000512>
- Yoo, E., & Kim, Y. J. (2020). Factors influencing the readiness for inclusion among pre-service early childhood teachers. *Early Childhood Research Quarterly*. <https://doi.org/10.1016/j.ecresq.2020.01.001>
- You, S., Kim, E. K., & Shin, K. (2019). *Teachers' belief and efficacy toward inclusive education*. *Sustainability*, 11(5), 1489. MDPI

- Zeng, X., & Low, H. M. (2024). Preschool teachers' attitudes about inclusive education and its influencing factors in China. *Behavioral Sciences*, 14(10), 904. <https://doi.org/10.3390/bs14100904>
- Zhao, M., Ai, J., Zhang, J., & Peng, Y. (2025). The relationship among teachers' characteristics, self-efficacy and attitudes towards inclusive education among Chinese preschool teachers. *International Journal of Disability, Development and Education*, 1–16. <https://doi.org/10.1080/1034912X.2025.2465280>