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ABSTRACT

This study explored 20 pre-service early childhood (EC) teachers' reflections on specialist teaching methods – co-constructing, deconstructing, and community building – along with their experiences relating to the theory-practice gap phenomenon. The study employed a phenomenological approach to investigate the reflections and experiences of pre-service EC teachers enrolled in a public university in Türkiye. This study was grounded in Gibbs' Reflective Cycle (1988) as a theoretical and methodological framework. Data were collected during a 13-week 'teaching methods' course from six sources, including in-class group activities, self-reflections, peer evaluations, activity plans, an open-ended survey, and a focus group interview. Interpretative phenomenological analysis was used to analyse the data. The results showed that participants tended to focus more on practice than on theoretical knowledge across the three specialist teaching methods. Additionally, they had difficulties transferring theoretical knowledge into practice, which was consistent with the literature highlighting the 'theory-practice gap' in teacher education.

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Early childhood teacher education; reflective cycle; co-constructing; community building; deconstructing

Introduction

The importance of practice in pre-service EC teachers' learning cannot be overstated. Practical experience equips pre-service EC teachers with the skills and adaptability necessary to address the possible problems they may encounter in their future classroom (Vartuli, Snider, and Holley 2016). In line with this, studies report that the most valuable learning occurs during practicums, fieldwork, or internships, where they engage in real-world teaching environments (Darling-Hammond 2014). Moreover, integrating practical experiences in EC teacher education can help to reduce the 'practice shock' (Kim and Cho 2014), a challenge often intensified by the disconnect between university learning and practical experiences (Gardiner and Robinson 2010), which ultimately contributes to the 'theory-practice gap'.

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The 'theory-practice gap' has been identified as a central challenge in bridging the university-based theoretical component and the school-based practical component of teacher education (Heinz 2024; Jenssen and Haara 2024; Korthagen, Loughran, and Russell 2006), particularly in EC teacher education (Karlsson-Lohmander 2015; Kupila et al. 2024). In this regard, the challenge of effectively integrating practice remains significant, as many teacher education programs struggle to offer sufficiently coherent and high-quality practical opportunities (Heinz 2024; Jenssen and Haara 2024; Resch and Schrittesser 2023). Thus, there has been an ongoing debate about whether EC teacher education should prioritise theory or practice or the relationship between them (Björck and Johansson 2019). While some advocate for a balance between the two (Androusou and Tsfaos 2018), studies have highlighted the challenges and limitations associated with achieving quality in pre-service EC teaching practices (e.g. Li 2009; Loizou 2011). Nevertheless, this debate requires attention to pre-service EC teachers' experiences regarding the theory-practice gap, as their experiences may provide critical insight into how theoretical knowledge is interpreted and reflected.

How theoretical knowledge shapes teaching

While practical experience is often highly regarded, it does not always automatically transform into expertise (Darling-Hammond and Bransford 2005). To ensure practical experiences foster meaningful growth, they must first be grounded in strong theoretical understanding (Fazey, Fazey, and Fazey 2005). Although theoretical knowledge is often perceived as secondary to practice and criticised by those who challenge its role as the foundation of professional education (Björck and Johansson 2019), it remains a crucial component of EC teacher education. Importantly, theoretical knowledge provides a necessary foundation for developing broad and applicable knowledge that can guide teachers in diverse contexts (Kvernbekk 2005), particularly in EC education. Although theory is sometimes seen as abstract and disconnected from the realities of EC classrooms (Karlsson-Lohmander 2015), it does enrich the teacher education process and also helps pre-service teachers establish their professional knowledge base by offering a structured framework (Zeichner 2013).

Argyris and Schön (1974) and Kvernbekk (2012) claimed that practice is inherently shaped by theory; in other words, even when teachers take action, they ultimately apply theoretical principles consciously or unconsciously. To summarise this situation, the concept of 'reflection' is considered an important component, since it allows critical examination through the lens of knowledge and understanding (Sellars 2014). In line with this, Dewey (1933) defined *reflection* as a deliberate cognitive process that involves one's beliefs and knowledge used to address practical problems. With Dewey (1933) and Schön's (1983) work serving as a foundation, additional frameworks (Gibbs 1988; Kolb 1984) were created and widely disseminated in initial teacher education programs as support for the reflective process within professional practice (Mulryan-Kyne 2021). In this regard, Finlay (2008) emphasised that these models should be applied 'selectively, purposefully, flexibly and judiciously' (p. 10). Therefore, after careful consideration, Gibbs (1988) model was used as the primary framework for examining the role of reflection in addressing the theory-practice gap.

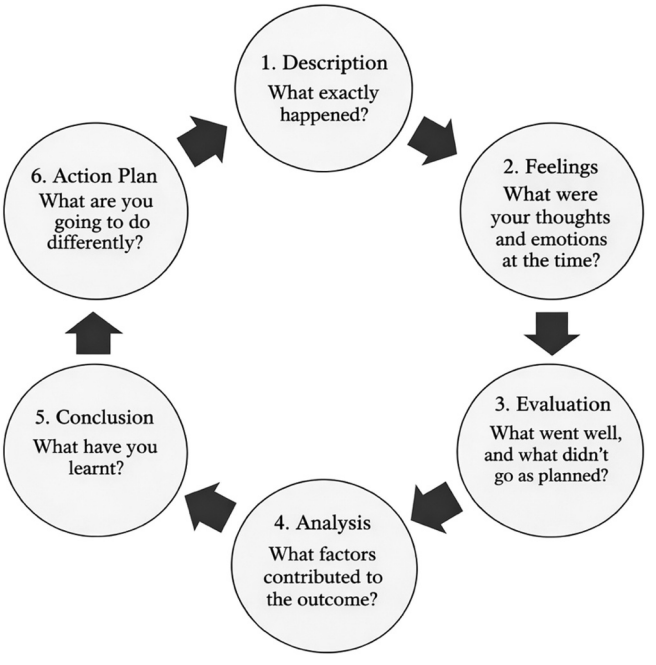


Figure 1. Reflective cycle. Adapted from Gibbs (1988, 49–50).

Reflection framework

Gibbs' Reflective Cycle (Gibbs 1988), shown in Figure 1, outlines a structured six-stage process of reflection; (i) Description (outlining what happened), (ii) Feelings (considering personal reactions), (iii) Evaluation (weighing positives and negatives), (iv) Analysis (making sense of the experience), (v) Conclusion (identifying general insights and specific learning), and (vi) Action Plan (planning future responses to similar situations). This model served as a framework for critically analysing experiences and has been widely applied in the field of education (e.g. Ditchburn 2015; Markkanen et al. 2020; Nwati and Jita 2021). In particular, within teacher education, Gibbs' (Gibbs 1988) cycle supported pre-service teachers in evaluating and adjusting their approaches while also bridging the gap between theory and practice. It emphasises that effective learning requires more than action alone, but ultimately requires structured reflection guided by theoretical knowledge (Gibbs 1988). Importantly, this aligns with studies which highlight the importance of reflection in bridging passive learning and active practice (e.g. Ditchburn 2015; Ismail and Çavuşoğlu 2017). For example, in EC teacher education, where pre-service teachers are equipped with theoretical knowledge, this model enables them to engage with reflective practices as a means of encouraging them to critically evaluate and improve their practices. As a result, Gibbs (1988) reflective cycle was adopted both as the theoretical framework and analytical lens used to explore how pre-service EC teachers experienced the gap in transfer of their theoretical knowledge into practice within the scope of the present study.

Building skilled educators through reflective practices

The role of teacher education programs in shaping the quality of teaching is crucial, as learning outcomes of children are significantly influenced by the quality of instruction they receive (Darling-Hammond 2017). As Goodwin, Madalińska-Michalak, and Flores (2023) argued, pre-service teacher education programs are crucial in shaping the future of education by providing the foundational tools and frameworks needed for effective teaching. Importantly, these programs also lay the groundwork for the development of reflective, knowledgeable, and skilled teachers who are capable of delivering high-quality education to future generations. Furthermore, the evolving theoretical knowledge regarded as 'specialist' in EC education (Krieg 2010), plays a crucial role in shaping the educational practices.

Building on this, MacNaughton and Williams (2009) identified 11 specialist teaching methods that have offered various theoretical perspectives regarding teaching. In the present study, three specialist teaching methods –*co-constructing, deconstructing*, and *community building*– which are often less commonly highlighted and/or encountered in practice within Turkish EC settings (see Ministry of National Education 2024) but are ultimately grounded in strong theoretical foundations with constructivism serving as a key theoretical foundation for the methods selected. Thus, this theory highlighted the selected methods, as each required theoretical understanding and practical implementation, as well as the fostering of active participation, reflection, and critical thinking in children. Additionally, these methods were considered due to their community-based orientation, along with each of them actively engaging children not only as learners but also as contributors to a shared social environment (MacNaughton and Williams 2009).

In this regard, *co-constructing*, rooted within constructivist theory, highlights children's voices and perspectives by involving them as active participants in the learning process. In this approach, teachers and children collaboratively build knowledge and meaning through shared experiences (MacNaughton and Williams 2009). For example, research in Canada and New Zealand showed that educators and children co-construct meaning together during shared activities like storytelling, which extends children's learning and enriches their understanding of the world (White, Stagg Peterson, and Quigan 2022). *Deconstructing* also draws on constructivist principles by encouraging children to critically examine their social world. It enables reflection on binary oppositions – such as strong/weak or good/bad – which demonstrates that these concepts are interdependent and must be understood in relation to each other (MacNaughton and Williams 2009). By deconstructing these binaries, children reconstruct new meanings based on their experiences and interactions, where they can question norms and understand diverse perspectives. Finally, *community building* focuses on creating a collaborative learning environment, which emphasises the constructivist belief in learning as a social process (Vygotsky 1978). In this method, children develop a sense of belonging by being part of an inclusive, cooperative classroom atmosphere (MacNaughton and Williams 2009), which has been acknowledged as fundamental for young children's identity formation, as well as their social and emotional developments (Erwin, Valentine, and Toumazou 2022). Rather than relying solely on teacher-led guidance, community building fosters peer interaction by allowing children with diverse characteristics to form connections and integrate into the classroom community. Indeed, participatory educational approaches

(e.g. Reggio Emilia) support democratic learning communities where children and teachers jointly investigate and 'craft bonds' with families and society (Fernández-Santín and Feliu-Torruella 2020). Such approaches not only strengthen children's voices but also promote critical thinking and active citizenship, which are increasingly valued in early childhood curricula (Casey, DiCarlo, and Sheldon 2019; Fernández-Santín and Feliu-Torruella 2020; Wilson, Ridley, and Morris 2024).

Furthermore, in today's increasingly digital and post-COVID world, the need for fostering children's socialisation and sense of community has become more apparent than ever (OECD 2024). For example, children have faced extended periods of isolation and limited peer interaction, which has negatively affected their social-emotional skills and community engagement (Oppermann et al. 2024). For this reason, embedding socially grounded, community-based teaching methods into teacher education is essential to empower teachers in supporting children's holistic development. Addressing this urgent educational need, the present study focused on how pre-service EC teachers engaged with these methods both theoretically and practically. Additionally, by contributing to the growing body of research that has emphasised the significance of social and community-based learning in early childhood education (Wood 2023), the aim of this study was to strengthen reflective, theory-informed teaching practices to meet the evolving needs of today's children and societies. In this regard, the purpose of the present study was to investigate pre-service EC teachers' reflections regarding the theory-practice gap phenomenon, particularly in relation to specialist teaching methods through co-constructing, deconstructing, and community building.

The present study

Building on these theoretical insights, the present study investigated pre-service EC teachers' reflections on specialist teaching methods – co-constructing, deconstructing, and community building–, along with their experiences with the theory-practice gap phenomenon relating to these specialist teaching methods. The specialist teaching methods in this study, grounded in the constructivist and socio-cultural theories of learning, have been internationally recognised as critical for fostering children's critical thinking (Hajare, Surve, and Patankar 2016; Le and Nguyen 2024), agency (Göncü and Main 2023; Sudarsan et al. 2022), and sense of belonging (Bentley, Fleury, and Garrison 2007; Göncü and Main 2023). Furthermore, despite the theoretical acknowledgement in many EC education frameworks, effectively implementing these methods in practice has continued to be a significant challenge worldwide. The success of these implementations depends not only on theoretical knowledge but also on the ability of teachers to critically reflect on practice and flexibly adapt pedagogical strategies to different classroom realities (Ditchburn 2015; Gibbs 1988; Ismail and Çavuşoğlu 2017). Therefore, offering opportunities for structured reflection is essential, as it enables pre-service EC teachers to monitor their actions, evaluate their effectiveness, and plan for future improvements in line with the appropriate theoretical principles.

In the Turkish context, the Ministry of National Education's Early Childhood Education Program (2013, 2024) adopted an eclectic approach which draws from various internationally recognised pedagogies, such as Reggio Emilia, High Scope, and Waldorf, all emphasising child-centred and active participation principles. Importantly, pre-service

EC teachers receive instruction on these pedagogies during their teacher education, yet often experience difficulties in transferring these theoretical models into classroom practice. With this focus in mind, the present study offered insights into the theory-practice gap at the micro level by examining not only general barriers to practical applications but also the specific reflective demands involved in transferring complex theoretical models into everyday teaching.

Methodology

The present study was an exploratory research designed as a phenomenological study which aimed to explore pre-service EC teachers' reflections on the theory-practice gap phenomenon specifically in relation to specialist teaching methods, as well as to discuss the phenomenon leaning on these experiences by using participants' statements and works (Creswell 2014; van Manen 2016). Accordingly, the research questions were as follows:

RQ1. *How do pre-service EC teachers reflect on specialist teaching methods –co-constructing, deconstructing, and community building– in the context of the theory-practice gap?*

RQ2. *How do pre-service EC teachers experience the theory-practice gap in their learning process of specialist teaching methods – co-constructing, deconstructing, and community building– regarding the transfer of knowledge from theory to practice?*

Participants and the course

Data were collected from third-year students ($n = 20$) from the Department of Early Childhood Education at a public university located in Türkiye. The students invited to participate in the study were enrolled in the compulsory 'Teaching Methods in Early Childhood Education' course. Of the 37 students enrolled in the course and practicum, 20 of them volunteered to participate in the study.

The study participants' prior practical experiences were limited but structured. All participants completed one-semester of compulsory practicum in their first year of study where they spent a full day each week doing observations under the guidance of weekly assignments designed to assist them in identifying and considering daily routines and classroom dynamics. Additionally, the participants simultaneously engaged in a compulsory practicum program during the semester in which the present study was conducted. They were expected to plan and carry out activities, participate actively in class, and observe the classroom teacher's methods throughout this practicum. They were also expected to provide activity reports to their practicum supervisor, get feedback from them, and document their teaching processes through reflections.

Regarding their theoretical experiences, the participants had completed curriculum-based coursework by the time of the study. In addition to that, they simultaneously participated in the 'Teaching Methods in Early Childhood Education' course. The course lasted 13 weeks as a compulsory course and was held for 5 hours consecutively per week during 2022–2023 fall

semester. The course was related to the application of general methodological principles regarding teaching specific subject-matter, teaching and learning processes, as well as designed to identify various teaching methods that could be used in the early childhood years. In addition to providing an overview of the teaching methods in the field of early childhood education, the course was designed to stimulate interest, awareness, and inquiry into putting theory into practice.

Position of the authors

Regarding the authors' relationship with participants and students, the first two authors were research assistants, while the last author was the course instructor and designer. Throughout the course, the first two authors acted as researchers with active participation in the course processes such as observations, providing in-class feedback, and providing research materials including surveys. They also carried out research activities such as a focus group interview. Regarding the practicum, the first two authors supervised the students throughout the semester in their in-class practices. Within the scope of this supervision, the activity plans prepared by the participants for their practicum were reviewed, and necessary feedback was provided, which in turn, was followed by observations of pre-service EC teachers' teaching practice twice throughout the semester.

On the other hand, the last author acted as the course instructor and was responsible for course planning, teaching, assessing, and grading. As part of the research process, participating students communicated with the first two authors, along with all the students communicating with the last author for the course-related issues such as grading, attendance, and teaching processes. Regarding the practicum, the last author took on the role of coordinator and was ultimately responsible for communicating with the preschools involved, managing the official processes, designing the practicum process for the students, and grading.

Data sources

The present study employed in-class group activities, self-reflections/peer evaluations, activity plans, an open-ended survey, and a focus group interview within the context of Gibbs (1988) reflective cycle aimed at revealing pre-service EC teachers' experiences regarding specialist teaching methods. These sources were structured to correspond with each stage of the cycle, while also enabling participants to systematically reflect on their teaching practices, emotions, and strategies for improvement (see Table 1).

At the *description stage*, in-class group activities were used to examine pre-service EC teachers' responses to problem situations modelled through case scenarios reflecting early learning settings. Three pedagogical cases were developed to explore practical solutions on what students would do in practice for the relevant specialist teaching methods, along with fostering shared problem-solving and immediate reflection regarding their actions. Each case was designed to reflect the authentic challenges in implementing the respective specialist teaching methods in early learning settings. In this respect, for *co-constructing*, each group was asked to work with an imagined classroom scenario on an art piece of a famous painter to uncover, express, and share children's understandings, assumptions, and contradictions in a developmentally appropriate way. For *community building*, each group tried to work with different age groups to develop children's sense of belonging in a very crowded classroom

Table 1. Data sources and purposes.

Gibbs (1988) Reflective Cycle Step	Data Sources	Purpose	Number of Items	Example Item	Response Format
Description	In-class Group Activities	These activities focused on pre-service EC teachers' responses to problem situations modelled through case scenarios in early learning settings. They encouraged collaborative exploration of practical solutions in the practice of specialist teaching methods.	3	Imagine that you are working with a group of three-year-olds and the semester is just beginning with a very crowded classroom. Although you encourage children to interact with each other in free play time, the children seem very quiet and shy. But one thing you realise is that children have a lot of fun while playing a game that is constructed by you and this allows them to talk to each other. How could you design a play activity where you can develop children's sense of belonging while considering the adult/child ratio?	Written document & oral presentation
Feelings	Self-Reflection	Pre-service EC teachers reported their personal reactions, thoughts, and insights regarding what they would do in the practice of specialist teaching methods. This tool helped them consider how their emotions influenced their teaching and to identify strengths and areas for growth.	3	How well did you take into account the relevant teaching methods' implementation requirements in your plan? Please, write down three reasons why you think so.	Written document
Evaluation	Peer Evaluation	Pre-service EC teachers provided feedback on each other's teaching practices, allowing them to critically assess peers' approaches and compare them with their own. This process encouraged constructive criticism, learning from alternative perspectives, and identifying shared challenges and strategies.	3	How well did they take into account the relevant teaching methods' implementation requirements in their plan? Please, write down three reasons why you think so.	Written document
Analysis	Activity Plans	Pre-service EC teachers documented their rationale for using specialist teaching methods, focusing on developmental and practical aspects. This instrument encouraged critical analysis, preparation of plans, and identifying areas for improvement.	3	You need to add the rationale for using a particular teaching technique, how you used it, and the developmental aspects you considered while designing the activity.	Written document
Conclusion	Open-ended Survey	The survey collected pre-service EC teachers' reflections on understanding and what they would do in the practice of specialist teaching methods. It facilitated reflection on how theoretical knowledge shaped their practical applications and provided insights into challenges may be encountered in practice.	15	What are your considerations when implementing co-construction as a teaching method?	Written document
Action Plan	Focus Group Interview	The interview allowed pre-service EC teachers to discuss their reflections on specialist teaching methods, exploring their educational philosophy, self-reported reflections on what they would do in practice, challenges, and specialisation potential. It encouraged them to articulate strategies for improving their teaching practices in future scenarios.	10	How would you use these methods in your future educational practices?	Verbal (online meeting)

where some of the children seemed quiet and shy. For *deconstructing*, each group attempted to work on a fairy tale which lacked an egalitarian perspective in order to deconstruct them and support children's development and creativity. The *feelings stage* was addressed through self-reflection, where pre-service EC teachers recorded their reflections about what they would do in specialist teaching methods practice. Importantly, this data collection source provided an opportunity to identify participants' strengths, as well as areas for growth while considering how their emotions influenced their teaching. For the *evaluation stage*, peer evaluations were conducted to provide opportunities for pre-service EC teachers to give and receive feedback regarding one another's teaching practices. Through this process, participants critically assessed their peers' approaches, compared them to their own, and engaged in constructive discussions. Peer evaluations not only increased self-awareness but also facilitated the identification of shared challenges and effective strategies. At the *analysis stage*, activity plans were employed to identify participants' rationale for using specialist teaching methods, where both developmental and practical implementation were applied. These plans encouraged pre-service EC teachers to critically analyse their teaching strategies, prepare structured plans, and reflect on areas which needed improvement. For the *conclusion stage*, an open-ended survey was designed to collect data about participants' reflections regarding their understanding, along with what they would do in the practice of specialist teaching methods. This provided an opportunity to reflect on how theoretical knowledge shaped their practical applications and experiences about any challenges they may ultimately face while implementing specialist teaching methods. Finally, the *action plan stage* was addressed through a focus group interview, which provided an opportunity for pre-service EC teachers to discuss their perspectives on specialist teaching methods. These discussions included their educational philosophy, self-reported reflections on what they would do in practice, challenges, potential changes, and specialisation. Furthermore, the focus group interview encouraged participants to express their strategies for improving their teaching practices in future scenarios. In this respect, the details regarding data sources are presented in Table 1.

Trustworthiness

To enrich the variety of data, data triangulation and methodological triangulation were used (Denzin 1978). To ensure data triangulation, data were collected at weekly intervals (Guba 1981). Methodological triangulation, which refers to combining data sources, was ensured through in-class group activities, self-reflections/peer evaluations, activity plans, an open-ended survey, and a focus group interview to strengthen the credibility of the research (Shenton 2004). Moreover, the opinions of three EC education experts on the open-ended survey and focus group interview questions were sought to ensure the appropriateness, clarity, and applicability (Creswell 2014), and the necessary revisions were made accordingly.

Data collection procedure

During the semester, in-class group activities were carried out within the scope of the course, and groups were randomly assigned each week among the voluntary students. In-class group activities were conducted with groups of 3–4 students who were presented with various case scenarios that could occur in a real-life early learning setting (Zottmann et al. 2013). They were asked to solve these cases

using specialist teaching methods to support them in bridging the theory-practice gap (Syring et al. 2016) through case-based learning practice (Palmer 2004). These case scenarios were presented as text-based cases, given the participants' limited experience in teaching (Syring et al. 2016), and their written solutions for the case scenarios were analysed. Additionally, they were asked to present their solutions to the class regarding implementation of the theory into real-life teaching practices. Subsequently, each participant was expected to evaluate their own solution with a self-reflection form, as well as the other group's solution via a peer evaluation form, thus allowing them to look back and derive insights (Korthagen 1985) from their in-class group activities.

Participants were also provided with an opportunity to apply their theoretical knowledge in practice through in-class group activities conducted after the theoretical presentation and discussion of specialist teaching methods each week. Additionally, they were encouraged to implement the teaching methods in their practicum throughout the semester via written (e.g. syllabus) and verbal (e.g. classroom discussions) approaches.

In the last 2 weeks of the course, participants were asked to write an activity plan for each specialist teaching method and present their activities within the course for discussion. Then, an open-ended survey consisting of questions about specialist teaching methods and their use was administered to participants. Finally, at the end of the semester, an audio-recorded focus group meeting regarding specialist teaching methods was organised to enable participants to voice their experiences (Creswell 2014).

Data analysis

Interpretative phenomenological analysis (IPA) was used to investigate how individuals make sense of their experiences (Pietkiewicz and Smith 2014). In the data analysis process, the six-stage framework for IPA was employed (Smith, Flowers, and Larkin 2009) and combined with a two-cycle coding approach (Saldaña 2009). After the transcription of data, Smith's first stage, *'reading and re-reading'*, was implemented, where researchers read the data twice to get more familiar. Subsequently, in the second stage, *initial coding*, Saldaña's (2009) two-cycle coding was considered. First, all data sources were inductively coded simultaneously and independently by two researchers, contributing to the study's confirmability as the first-cycle coding. Intercoder agreement was then calculated using the formula provided by Miles, Huberman, and Saldaña (2014), yielding a result of 94%, indicating an acceptable level of agreement. Afterwards, a second-cycle coding was performed (Saldaña 2009) where researchers reviewed the codes together, searching for connections among the codes revealed in the first cycle. Following this, the third stage, *developing emerging themes*, was conducted where themes were identified by examining connections among the extracted codes. In the subsequent stage, *searching for connections across emergent themes*, connections between themes were identified, and common points across all data sources were revealed. This process was implemented case by case, given that IPA aims to reach participants' lived experiences. Finally, in *looking for patterns across cases*, links between participants' experiences were drawn, identifying themes, sub-themes, codes, and

Table 2. The coding structure and code frequencies.

Themes	Sub-themes	Codes	Sub-codes	Definitions
Reflections of Pre-service EC Teachers on Specialist Teaching Methods (*n* = 470, 38%)	Reflections on theoretical aspects of specialist teaching methods (*n* = 125, 27%)	Descriptions of specialist teaching methods (*n* = 71, 57%)		Personal descriptions and definitions regarding the teaching methods
		Insights on specialist teaching methods (*n* = 49, 39%)		Understanding and interpretation of the teaching methods within their learning processes
		Proposed Changes to specialist teaching methods (*n* = 5, 4%)		Proposed or suggested changes regarding the teaching methods
	Reflections on *what students would do in the practice of specialist teaching methods* (*n* = 179, 38%)	Practical processes of specialist teaching methods	Specialisation in the practice of specialist teaching methods (*n* = 18, 10%)	Responses on whether expertise or specialisation is necessary for the effective practice of the teaching methods
			Challenges in practice (*n* = 21, 12%)	Reactions addressing the possible difficulties to be encountered in practice of the teaching methods
			Key considerations for practice (*n* = 81, 45%)	Insights into the factors needed to be considered to practice the teaching methods
			Planning processes for practice (*n* = 59, 33%)	Responses on the planning stages and processes involved in preparing for practice of the teaching methods
	Reflections on transferring theoretical knowledge into practice in specialist teaching methods (*n* = 166, 35%)	Positioning of specialist teaching methods within educational philosophies (*n* = 20, 12%)		Reflections on how the teaching methods integrated and positioned within personal educational philosophies
		Rationales for using specialist teaching methods (*n* = 100, 60%)		Insights into the reasons and justifications provided for implementing the teaching methods
		Comparative Perspectives with other European countries (*n* = 3, 2%)		Opinions on the practice of specialist teaching methods compared to experiences in other European countries
		Anticipations regarding future practice of specialist teaching methods (*n* = 43, 26%)		Predictions regarding their use of the methods in the classroom setting during their future career

sub-codes (see Table 2). Frequencies and percentages were calculated based on coded segments to show the relative distribution of themes.

Themes	Codes	Sub-codes	Definitions
Pre-service EC Teachers' Transfer of Theoretical Knowledge into Practice (n = 753, 62%)	Using theoretical concepts (n = 130, 17%)	Cultivating a sense of belonging (n = 64, 49%)	Creating an inclusive learning setting that promotes children's sense of belonging
		Highlighting binary opposites (n = 35, 27%)	Emphasising complementary opposing concepts, in their discussions or activity designs
		Collaboratively building knowledge (n = 31, 24%)	Approaching in a way that involves both teacher and children in the construction of knowledge by fostering a shared learning experience
	Accuracy in planning the practice of specialist teaching methods (n = 142, 19%)	Accurate conceptualisation (n = 72, 51%)	Effectively demonstrating the understanding of the teaching methods in planning the practice
		Misconceptualization (n = 70, 49%)	Having misconceptualization regarding the teaching methods in planning the practice
	Encouraging expression of understanding (n = 61, 8%)	Eliciting children's active expressions (n = 41, 67%)	Including children's ideas, opinions, and experiences in activity design and in-class practices
		Incorporating children's voices (n = 20, 33%)	Encouraging children to actively express their thoughts and opinions while incorporating their voices and perspectives into the learning process
	Encouraging participation (n = 98, 13%)	Facilitating in-class interaction (n = 50, 51%)	Fostering communication and interaction opportunities between teachers and children, as well as among children
		Fostering active engagement (n = 48, 49%)	Involving children actively in their learning experiences, ensuring they are not passive recipients but engaged participants
	Assisting children's learning (n = 270, 36%)	Cultivating critical thinking (n = 30, 11%)	Encouraging children to think critically and engage in analytical thinking
		Promoting social learning (n = 56, 21%)	Facilitating peer learning and collaboration, where children learn by interacting with their peers and social environment
		Considering developmental domains (n = 57, 21%)	Helping children progress in their development by supporting them in different domains
		Ensuring developmental appropriateness (n = 127, 47%)	Designing activities and tailoring teaching methods to align with children's developmental levels and individual needs
	Incorporating child-centred approaches (n = 52, 7%)	Child-centred approaches (n = 44, 85%)	Prioritising children's autonomy interests and active participation
		Non-child-centred (teacher-centred) approaches (n = 8, 15%)	Taking a more directive role, focusing on structured instruction, and controlling the learning processes

Ethical considerations

Before conducting the study, ethical permission was obtained from the Human Research Ethics Committee of Middle East Technical University, Türkiye (Ref. Number: 0537-ODTUİAEK-2022). Then, in the first course, students were informed about the research procedures to be conducted. It was explicitly stated that only students who volunteered would participate in the study. Simultaneously, their declarations of voluntariness were collected through a consent form. Participation in the research was entirely voluntary, and participants were assured that if they felt uncomfortable with the research process or any other reason during participation, they could refuse to participate or withdraw without incurring any consequences. It was also made clear that students who chose not to participate in the study would not face any consequences regarding their course performance or grading. Moreover, no additional incentives were provided to students who participated in the study. The data collection in the courses involved only the observation of students' educational processes, which did not interfere with the course flow. Focus group responses were anonymised to ensure that individual participants could not be identified. Data collected from the participants were kept entirely confidential, evaluated only by the researchers, and not shared with third parties.

Findings

The collected data were examined in depth. To clarify the coding process and enhance the flow of presentation, the data was analysed through thematic coding and explained in the following sections in line with two identified themes (see Table 2). Throughout the findings section, the raw frequencies (n), representing the number of coded segments, were provided for clarity. The percentages indicated the relative distribution of coded segments across themes rather than the number of participants; therefore, a single participant may contribute to multiple codes. In this regard, the theme-level percentages were calculated based on the overall number of coded segments, while the subtheme/subcode percentages were calculated within their corresponding main category and sum to 100% within each theme. Hence, the pre-service EC teachers' reflections on specialist teaching methods and their experiences in relation to the transfer of knowledge from theory to practice were explained in detail.

Theme 1: reflections of pre-service EC teachers on specialist teaching methods

Direct and indirect questions were asked to the pre-service EC teachers through an open-ended survey and a focus group interview. Their reflections were examined in three categories as the reflections on *theoretical aspects of specialist teaching methods* (n = 125, 27%), *what students would do in the practice of specialist teaching methods* (n = 179, 38%), and *transferring theoretical knowledge into practice in specialist teaching methods* (n = 166, 35%).

Pre-service EC teachers' reflections on theoretical aspects of teaching methods included their *descriptions of specialist teaching methods* (n = 71, 57%), *insights on specialist teaching methods* (n = 49, 39%), and *proposed changes to specialist teaching methods* (n = 5, 4%). In their *descriptions of specialist teaching methods*, pre-service EC

teachers tended to identify a key concept for each *specialist teaching method*, along with defining the methods through this key concept without also considering the philosophical foundations behind the methods. These concepts were 'collaboratively building knowledge' for *co-constructing*, 'sense of belonging' for *community building*, and 'binary opposition' for *deconstruction*. For example, a participant defined deconstruction as, 'it is a technique that allows one to contradict binary opposition'.

For their *insights on specialist teaching methods*, it was revealed that participants did not believe that the theoretical knowledge they acquired was fully applicable in practice. However, it was also revealed that they perceived theoretical knowledge as rigid with strict boundaries, allowing little to no room for personal adaptation to real-world settings:

> Theoretical knowledge cannot be implemented as we have learned, in a step-by-step manner or with complete accuracy. You know, we say it's child-centered, but under the current conditions –crowded classrooms, parent and school administration expectations etc.–, it's just not fully applicable.

Moreover, they mentioned that the in-service EC teachers whom they observed during their practicum, did not implement specialist teaching methods. Their mention of being unable to develop insights into specialist teaching methods due to not being able to observe it even during their practicum further reinforced how pre-service EC teachers experience gaps between theory and practice. In line with this, none of the students attempted to implement any of the specialist teaching methods in their practicum even though it was encouraged throughout the semester via written (e.g. syllabus) and verbal (e.g. classroom discussions) approaches.

Furthermore, participants *proposed changes to specialist teaching methods* in relation to their applicability. The common point among these suggestions was participants' uncertainties regarding the transfer of theoretical knowledge into practice, as they questioned: 'In co-constructing, children's ideas are gathered to make a joint decision, right? For example, sometimes when one child says something, others just repeat it. … whether their responses are truly original or simply repeating each other … '.

Pre-service EC teachers' reflections on what students would do in the practical implementation of the teaching methods included several codes regarding practical processes of the teaching methods as *specialization in the practice of specialist teaching methods* (n = 18, 10%), *challenges in practice* (n = 21, 12%), *key considerations for practice* (n = 81, 46%), and *planning processes for practice* (n = 59, 33%). For specialisation in the practice of specialist teaching methods, all participants agreed that expertise and subject-specific training were necessary to implement the methods: 'While we experience some difficulties when we try to apply the fresh information we have just learned, … even non-experts trying to use it have significant challenges'. Moreover, the participants stated that implementation of specialist teaching methods by non-experts may cause misconceptions on the subject. For example, they underlined that only theoretical knowledge about the methods might not be sufficient, and that practical training would be the most appropriate option.

Related to the *challenges in practice*, one participant emphasised that the quality of practical experience was essential for effective implementation: 'I think quality is also essential … If we did not spend time on the practical part, the quality of the information we learned would be deficient, and we would not be able to apply it'. In addition to

concerns about training quality, participants stated that families and school administrators, children's different developmental levels, crowded classrooms, time management, and inadequate materials caused most classroom issues. Regarding their *key considerations for practice*, they highlighted the importance of developmental characteristics of children, proper planning, child-centeredness, teaching experience, facial expressions and body language of teacher, classroom management, and communication with parents.

Participants also detailed their *planning processes for practice*. In this regard, participants stated that community building should be implemented at the beginning of the semester for children to internalise the rules; co-constructing should be implemented towards the middle of the semester to help make the co-constructing process more understandable for children; and deconstructing should be implemented towards the end of the semester to discover and shatter any stereotypes that children may have developed, as well as providing a broader perspective. Additionally, they mentioned while planning the learning process using specialist teaching methods, they needed the cooperation of parents and school administrators, create an appropriate environment, provide necessary materials, ensure proper assessment, be aware of the developmental aspects and be informed regarding the children's background.

Pre-service EC teachers' reflections on *transferring theoretical knowledge into practice in specialist teaching methods* included their *positioning of specialist teaching methods within educational philosophies* (n = 20, 12%), *rationales for using specialist teaching methods* (n = 100, 60%), *comparative perspectives with other European countries* (n = 3, 2%), and *anticipations regarding future practice* (n = 43, 26%). According to their *anticipations regarding future practice*, the pre-service EC teachers indicated that they were enthusiastic and excited to use specialist teaching methods in their future careers:

> When I have my class, I would love to use them. For example, to determine our rules, to carry out our activities, and so on … I thought, 'I should do this … ' and as I said, having this knowledge was something that excited me.

Only a few participants stated they had yet to decide whether to implement it. Moreover, participants noted that the number of children, material accessibility, and age group were deciding factors for implementation.

While *positioning specialist teaching methods within educational philosophies*, participants stated that their educational philosophies were child-centred, focused on the children's creativity, and highlighted hands-on learning. Regarding the *rationales for using specialist teaching methods*, it was revealed that practical rationales such as highlighting children's opinions, increasing cooperation, and revealing perspectives were supported by theoretical rationales, including reaching a common consensus, sense of belonging, and having a broader perspective.

Participants also had *comparative perspectives with other European countries* regarding transferring theoretical knowledge into practice. They emphasised mutual learning, in which both educational settings gave importance to the development of children through specialist teaching methods. Additionally, they mentioned that although there were ongoing efforts to incorporate specialist teaching methods, to draw inspiration, and benefit from European educational approaches, there were some differences in implementation. Their rationale behind this evaluation was related to context-specific circumstances in Türkiye:

> Sometimes, there are twenty-five children in our class, with only one teacher or an assistant teacher. It is challenging to implement a child-centered approach in this class; you know, we mentioned schools in Europe, and it is different. Maybe it can be applied more easily there because they can work with smaller groups and more teachers.

They acknowledged that these contexts shaped educational approaches, and although there were some differences in practice, teachers and pre-service teachers attempted to navigate in ways which aligned with the Turkish context: 'We are already trying to do child-centred education in different ways. (. . .) Implementing child-centered methods varies according to the school district, environment, garden, and the materials they use'.

Theme 2: pre-service EC teachers' experiences in transfer of knowledge from theory to practice

To understand pre-service EC teachers' experiences in the transfer of knowledge from theory to practice within the scope of the reflective cycle, their in-class group activities, self-reflection/peer evaluations, and activity plans were examined. Depending on their experiences, the analysis yielded codes as *using theoretical concepts* (n = 130, 17%), *accuracy in planning the practice* of *specialist teaching methods* (n = 142, 19%), *encouraging expression of understanding* (n = 61, 8%), *encouraging participation* (n = 98, 13%), *assisting children's learning* (n = 270, 36%), and *incorporating child-centered approaches* (n = 52, 7%). In terms of *using theoretical concepts*, it was observed that, while preparing activity plans, providing self-reflections and peer evaluations, and addressing in-class group activities, they only focused on the key concepts which defined the methods. Thus, they frequently used *collaboratively building knowledge* (n = 31, 24%), *cultivating a sense of belonging* (n = 64, 49%), and *highlighting binary oppositions* (n = 35, 27%) as the essence of the theoretical framework, while transferring their knowledge from theory to practice. They tended to use the phrase '*collaboratively building knowledge*' interchangeably with co-constructing. Similarly, for community building, they were solely focused on *cultivating a sense of belonging* in their practices. Similarly, for deconstructing, they were only *highlighting binary oppositions* in activity plans and in-class group activities.

In addition to their use of theoretical knowledge, *accuracy in planning the practice of specialist teaching methods* was also underlined under two subcodes as *accurate conceptualization* (n = 72, 51%), and *misconceptualization* (n = 70, 49%) in their transfer of knowledge from theory to practice. This also suggested that they had some understanding of the terminology and theoretical background of the methods in *accurate conceptualization*. For example, they mentioned this in their reflections as 'Aiming to reach a conclusion in line with the ideas presented by the children' for co-constructing, and 'Making every child contribute in some way to the empty corner to support children's greater attachment to the classroom and classroom community' as part of community building. However, they also showed some *misconceptualization* and had difficulty adequately recognising the method, as well as produce solutions when applying in-class activity cases. To illustrate, they were 'Expecting each child to draw a picture of their story cards to form a piece of their groups' story to help them develop a sense of belonging to their group' for community building, along with mentioning 'Two opposite words could have been highlighted to create a new sense' for deconstructing.

For *encouraging expression of understanding*, they focused on *eliciting children's active expressions* (*n* = 41, 67%) and *incorporating children's voices* (*n* = 20, 33%). For *eliciting children's active expressions*, participants were aware of enabling children to share their assumptions: 'We can make children share their understandings and misunderstandings'. However, there was confusion on how to do this, as well as where to focus, for example, one participant stated: 'co-constructing strategy can be offered in many situations, such as the teacher's guidance and the correct information on the children's ideas'.

Moreover, it was seen that participants were aware of the importance of allowing children to express themselves to share their ideas and perspectives and that they can acquire this objective through specialist teaching methods. They stated this as, 'They (specialist teaching methods) allow us to create learning groups in which children will learn from each other, brainstorm together, expand their perspectives, and establish social themes'. Likewise, in incorporating children's voices participants highlighted the importance of children's ideas: 'These methods make children feel that their words are valuable . . . '

For *encouraging participation*, they focused on *fostering active engagement* (*n* = 48, 49%) and *facilitating in-class interaction* (*n* = 50, 51%). For *fostering active engagement*, all participants agreed that active engagement, which allows children to become active participants in their learning process, can be provided through specialist teaching methods. Since pre-service EC teachers were knowledgeable about the characteristics of specialist teaching methods, they mentioned *facilitating in-class interaction* to support children's learning. Participants highlighted that through specialist teaching methods, they could create a discussion environment in which children could communicate and interact with each other, as well as with the teacher.

Participants focused on *assisting children's learning* in the transfer of knowledge from theory to practice. In that, they highlighted the importance of *cultivating critical thinking* (*n* = 30, 11%), *promoting social learning* (*n* = 56, 21%), *considering developmental domains* (*n* = 57, 21%), and *ensuring developmental appropriateness* (*n* = 127, 47%). For *cultivating critical thinking*, participants emphasised that specialist teaching methods practice could raise children's awareness and support the development of critical thinking skills by exemplifying this with some of their practices as 'asking children what makes something ugly and what makes something beautiful', and 'making them think about these value judgments and do critical thinking'. Additionally, participants stated the importance of specialist teaching methods in *promoting social learning*: 'Children can learn to respect different ideas', and 'Questions that encourage empathy, which help children to better understand the situation, can be asked'. In addition to having a direct impact on children's social learning, participants also added that specialist teaching methods can be used as tools to support children's overall learning by *considering developmental domains*. They emphasised that the use of materials, questions, and activities with specialist teaching methods could positively affect children across all developmental domains. Furthermore, participants frequently mentioned *ensuring developmental appropriateness* while implementing specialist teaching methods with young children. In this context, they emphasised age appropriateness, attention span, holistic development, and hands-on learning.

Finally, they mentioned that specialist teaching methods enabled incorporating child-centred approaches. For example, most of the participants focused on combining specialist teaching methods with children's needs, interests, previous knowledge, and

minimum teacher intervention to provide child-centred education. They highlighted their *child-centered approaches* (n = 44, 85%) stating, 'specialist teaching methods enable [teachers] to prepare a plan by considering the needs of the children'. On the other hand, some participants stated that teachers can be involved in the method implementation process, as well as highlighted the importance of *non-child-centered (teacher centered) approaches* (n = 8, 15%) in practice. For example, they justified their points as, 'in cases where children do not know, the teacher passes on their knowledge to them', and 'teacher explains the meaning and the message that wants to be conveyed'.

Discussion

The findings of this study shed light on pre-service EC teachers' reflections regarding the specialist teaching methods – co-constructing, deconstructing, and community building–, along with their perspectives relating to the theory-practice gap. These findings highlighted challenges in transferring theoretical knowledge into practice while focusing on areas in which EC teacher education programs could strengthen their approach by promoting more effective EC educational practices.

Navigating the gap between theory and practice

One of the key findings of this study was the acknowledgement among pre-service EC teachers that specialist teaching methods required both theoretical knowledge and practical expertise, which is consistent with Androusou and Tsfaos's (2018) emphasis on the need to balance the two. For example, participants emphasised the importance of professional development and subject-specific training to overcome misconceptions and challenges associated with specialist teaching methods. This also aligned with previous research emphasising the role of teacher education programs in equipping future educators with the tools and frameworks needed for reflective and effective teaching (Goodwin, Madalińska-Michalak, and Flores 2023).

However, participants highlighted several challenges in specialist teaching methods practices in classroom settings, such as classroom size, resource availability, and different developmental levels among children. These challenges were again consistent with previous research, in this instance, the practical difficulties of implementing constructivist and child-centred approaches (Demircan 2022; Li 2009; Loizou 2011). Notably, these barriers highlighted the need for teacher education programs to integrate structured, reflection-based strategies (e.g. Gibbs' Reflective Cycle) that enable pre-service teachers to make sense of and adapt to such contextual limitations. In this regard, the participants' suggestions for planning specialist teaching methods implementation (e.g. using specific methods within a timeline in the semester and involving school administrators and parents) should reflect an awareness of the contextual factors that shape educational practice. This indicates a growing capacity among pre-service teachers to engage in practical problem-solving informed by theoretical principles (Baier et al. 2021; Stürmer, Könings, and Seidel 2013). Also, this practical insight was an encouraging sign that pre-service EC teachers bridged the gap between theory and practice.

While participants had positive reflections about using specialist teaching methods in their future classrooms, they also expressed uncertainties about the ability to implement them effectively. They rationalised their motivation to use specialist teaching methods by focusing on their child-centred aspects. This inclination might arise from the engagement of pre-service EC teachers with child-centred education and practices from the beginning of their education program, which can enable them to develop their teaching philosophies based on these engagements. This is consistent with the current literature claiming that pre-service teachers bring their beliefs, educational experiences, and dispositions to their educational approaches and courses (Sheridan 2013). One reason for the internalisation of child-centred education could be the Ministry of National Education's Early Childhood Education Program (2013, 2024), which was developed eclectically by drawing on various pedagogies and ultimately shares similarities with European programs such as Reggio Emilia, Montessori, and Waldorf in terms of being child-centred. Consequently, pre-service EC teachers might have shaped their focus according to European practices by highlighting the influence of contextual factors. The smaller class sizes, lower adult-child ratios and greater resources observed in European settings were perceived as enabling factors for implementing child-centred methods. This contextual awareness is valuable for pre-service teachers, as it encourages them to critically evaluate and adapt their practices to fit their diverse teaching environments.

Moreover, the integration of Gibbs (1988) reflective cycle into the course structure supported pre-service EC teachers in critically examining their practices and connecting abstract theory to real-life classroom situations. Through guided stages, such as evaluation, analysis, and planning, participants were able to explain not only their intentions and challenges but also misconceptions and barriers in specialist teaching methods implementation. This structured reflection helped to define gaps in understanding, while also fostering further understanding of the pedagogical value of the methods. Although the reflections often relied on simplified concepts, they revealed a developing awareness of how teaching strategies could be adapted in more complex educational settings. These findings showed that using reflective frameworks can help pre-service teachers bridge the gap between theory and practice by supporting self-evaluation and planning for future teaching (Ditchburn 2015; Ismail and Çavuşoğlu 2017).

To build confident and skilled educators, teacher education programs must create opportunities for pre-service teachers to engage deeply with both theory and practice (Argyris and Schön 1974; Gibbs 1988; Kvernbekk 2012). This includes fostering a culture of critical reflection (Gibbs 1988; Schön 1983), providing opportunities for experiential learning (Gao 2015), and ensuring that internship experiences align closely with the theoretical principles taught through their coursework. By doing so, teacher education programs can empower pre-service EC teachers to effectively and confidently handle any challenges they may face.

Bridging the theory-practice gap

Findings highlighted the importance of theoretical knowledge as a foundation for effective teaching practices. At this point, pre-service EC teachers frequently acknowledged the role of theoretical concepts in guiding and planning the practice of specialist teaching methods. This finding was in line with studies emphasising the importance of theory

within teacher education programs (e.g. Kvernbekk 2005; Zeichner 2013). However, the tendency to process theoretical knowledge with rigid, step-by-step instructions revealed a potential misunderstanding of its purpose and implementation. Consequently, this caused a constant disconnection between theoretical knowledge and practice in pre-service EC teachers' education (Gardiner and Robinson 2010). This also aligned with the existing literature that has identified the theory-practice gap as a central challenge in teacher education (Jenssen and Haara 2024; Korthagen, Loughran, and Russell 2006; Kupila et al. 2024). At this point, pre-service EC teachers' concerns about the transfer of theory reflected the necessity of more integrative approaches in teacher education programs.

In our findings, pre-service EC teachers often expressed uncertainty and hesitation in implementing specialist teaching methods, despite verbal and written encouragement during the semester. Several participants justified this situation by connecting it to the absence of these methods in their practicum settings. They mentioned that since in-service EC teachers, whom they observed in their practicum, did not apply them, they never had a chance to attempt using them. While this explanation offered some rationale, it did not fully account for their lack of experimentation, especially within a course explicitly designed to support such applications. This hesitation pointed to deeper challenges, such as a lack of confidence in their theoretical understanding, especially for more abstract methods like deconstructing, and a limited internalisation of these pedagogical frameworks. In this regard, teacher education programs could emphasise this flexibility through case-based learning and problem-solving activities that demonstrate how theoretical principles can be adapted to real-world scenarios (Palmer 2004; Zottmann et al. 2013) depending on the classroom dynamics, such as diverse developmental levels, crowded classrooms, and limited resources.

Furthermore, the lack of opportunity to observe specialist teaching methods practices in practicum due to the absence of specialist teaching methods implementation reinforced the gap between academic learning and professional practice. Importantly, this finding suggested that stronger partnerships and collaboration between universities and internship schools were necessary to ensure implementation of diverse teaching methods. This was in line with Huong et al. (2020) and Heinz (2024), who highlight the importance of collaboration and partnership between universities and internship schools. These collaborations could also provide pre-service EC teachers with more practice-based examples of how theory can be enacted in classroom practice. At this point, reflection emerged as a crucial way of bridging the theory-practice gap (Ditchburn 2015; Ismail and Çavuşoğlu 2017), where Dewey's (1933) and Gibbs (1988) reflective cycle served as the foundation. However, the findings revealed that while pre-service EC teachers were able to use reflective practices to critically evaluate their methods, they often focused narrowly on key concepts (e.g. 'collaboratively building knowledge', 'sense of belonging', and 'binary opposition') rather than engaging deeply with the philosophical backgrounds of specialist teaching methods. This indicated a surface-level understanding of specialist teaching methods, which may have limited their ability to adapt and implement specialist teaching methods effectively in diverse educational settings. It also pointed to a broader issue in teacher education: without purposeful and guided reflection, pre-service teachers are at risk of understanding theory in a shallow or overly simplified way. Such a tendency to focus

narrowly on key concepts aligned with studies showing the impact of structured reflection on pre-service teachers' professional development (Karatepe and Yılmaz 2018). Encouraging more structured and guided reflection practices could help them to gain a better understanding of specialist teaching methods while also encouraging deeper interaction with both theoretical foundations and practical challenges.

Implications

The findings of this study confirmed the importance of addressing the theory-practice gap in pre-service EC teacher education. By prioritising integrated approaches which bridge the gap between university-based learning and real-world teaching, teacher education programs can prepare pre-service EC teachers to become reflective, knowledgeable, and skilled educators who can meet the diverse needs of future classrooms. Additionally, microteaching practices can be included in teacher education programs since they positively and permanently contribute to the teaching skills of pre-service teachers (Lee and Wu 2006). Moreover, to narrow the theory-practice gap, case-based learning is considered a promising method (Mostert 2007; Syring et al. 2016), which can be more efficient in applying productive knowledge compared to teacher education courses that are more theoretical (Baier et al. 2021). Also, case-based learning can be used in environments or situations where practical implementation is not feasible, such as during a pandemic. Furthermore, the research could be extended to in-service EC teachers who already have practical experience, leading to more detailed findings, as well as enabling discussions regarding barriers in transferring theory into practice. Additionally, in-service training can be provided to support teachers' improvement in diverse child-centred teaching methods, which is critical to enable them to benefit from diverse teaching methods that correspond to children's characteristics (Güven et al. 2013).

Furthermore, this study showed how common struggles in bridging theory and practice were shaped by context-specific factors such as national education policies, teacher training practices, and cultural expectations. These findings can contribute important implications for international audiences by emphasising that bridging the theory-practice gap requires more than curriculum reform (Henderson, Beach, and Finkelstein 2011; Rogan and Anderson 2011); it demands deeper focus on fostering reflective capabilities that enable pre-service teachers to internalise, adapt, and apply theoretically rich pedagogies, which are ultimately supported through practice and ongoing reflection (Jenssen and Haara 2024; Kupila et al. 2024; Resch, Schrittesser, and Knapp 2022).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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CRediT authorship contribution statement

N. Berfin Yapar: Conceptualisation, data collection, investigation, methodology, formal analysis, data curation, writing-original draft.
Sabiha Üzüm: Conceptualization, data collection, investigation, methodology, formal analysis, data curation, writing-original draft.
H. Özlen Demircan: Conceptualisation, methodology, supervision for data collection, data curation and writing-original draft.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used Grammarly/Grammarly Inc. and ChatGPT/OpenAI to improve language and readability. After using this tool/service, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

Data availability statement

The data are not publicly available due to ethical concerns.

Ethical approval

The ethical approval of the current study was granted by the Human Research Ethics Committee of Middle East Technical University. (Ethics approval protocol number: 0537-ODTUİAEK-2022). The

participants were informed about the research topic and expectations within the scope of the study, and their approval was taken for voluntary participation.

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