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Development of a culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills and learner empowerment in Thailand

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ABSTRACT

Foreign teachers in Thailand often struggle with limited instructional skills and a lack of cultural responsiveness, which constrains their ability to create inclusive, learner-centered classrooms and hinders student empowerment. These challenges are compounded by inadequate institutional support and limited integration of technology, creating an urgent need for targeted professional development. This study employed a research and development design, comprising four stages: needs assessment, program development, implementation, and evaluation, with a sample of 68 foreign teachers in Thailand's lower northern region. Data were collected through surveys, interviews, classroom observations, pre- and post-evaluations, and questionnaires. The findings revealed: (1) a mixed-methods needs assessment involving 58 foreign teachers and 12 school administrators identified pressing gaps in instructional skills, cultural adaptation, institutional support, and technology integration, highlighting the necessity of a culturally responsive, technology-supported professional development model; (2) a highly appropriate ($M = 4.60$, $SD = 0.10$) and feasible culturally responsive, technology-assisted peer coaching collaborative program was developed with five core components; (3) teachers' instructional skills for learner empowerment improved significantly from 42.75 % at the pretest ($M = 42.750$, $SD = 2.255$) to 81.85 % at the posttest ($M = 82.853$, $SD = 1.363$), reflecting a 39.1-percentage-point increase and surpassing the 80 % criterion; and (4) teachers reported the highest level of satisfaction with the program ($M = 4.69$, $SD = 0.10$), noting its structured design, cultural relevance, and practical applicability. Overall, the findings indicate that the program successfully met its intended objectives by strengthening teachers' instructional competence and fostering learner empowerment, while also pointing to areas for refinement, such as extending program duration and expanding opportunities for peer observation, to maximize long-term impact in diverse educational contexts.

1. Introduction

Foreign teachers play a crucial role in Thailand's education system by contributing linguistic expertise and cultural diversity, yet they often encounter persistent challenges in adapting their instructional practices to local contexts. Limited pedagogical preparation, insufficient professional support, and a lack of training in culturally responsive and technology-integrated teaching hinder their ability to empower learners effectively. These challenges, compounded by cultural and linguistic barriers, reduce teaching effectiveness and restrict opportunities for learner-centered, inclusive education. Addressing this issue is urgent, as empowered learners those who are autonomous, competent, and

engaged are better equipped to succeed academically and develop critical thinking and problem-solving skills essential for a globalized world.

Building on this rationale, the globalization has caused a rise in recruiting foreign teachers worldwide, including in Thailand (Bunnell, 2015; Dunn & Wallace, 2008). In response to educational reform aims that focus on English skills and global competence, Thailand has increasingly hired foreign teachers for public and private schools. While these teachers offer valuable linguistic and cultural resources, they often face challenges in adapting to unfamiliar systems, aligning with local norms, and managing instructional differences (Maringe & Ojo, 2017). These issues often weaken their teaching effectiveness and their ability to support diverse learners. According to Gay (2018) and Hammond

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(2015), effective teaching goes beyond subject knowledge; it also involves skills in lesson planning, classroom management, culturally responsive instruction, learner-centered instructional approaches, and assessment of learning outcomes in consistency with the learning objectives. Frymier et al. (1996); Deci & Ryan (2000); Schunk & DiBenedetto (2020); Reeve (2006) stated that empowered learners are those who feel autonomous, competent, and engaged, and tend to be more motivated, persistent, and successful academically and developing such learners is key to fostering critical thinking and real-world problem-solving skills.

For foreign teachers in Thailand, strong instructional skills are vital for empowering learners in culturally and linguistically diverse classrooms. These skills enable them to design inclusive and contextually relevant learning experiences that foster learners' engagement, autonomy, and long-term academic growth. Effective instructional strategies such as differentiated instruction, formative assessment, and active learning help bridge cultural and linguistic gaps that often exist in Thai classrooms (Hattie, 2009; Tomlinson, 2014). Foreign teachers with well-developed pedagogical competencies are better positioned to cultivate critical thinking and learner agency, which are essential elements of empowerment (Bandura, 1997; Zimmerman, 2002). Moreover, acquiring and adopting culturally responsive and student-centered approaches enhances the relevance of education for Thai learners and fosters inclusive participation (Gay, 2010; Ladson-Billings, 1995). Thus, targeted professional development to strengthen foreign teachers' instructional capacities is essential for advancing equitable and empowering education in Thailand.

Despite the critical role that instructional skills play in empowering learners, many foreign teachers in Thailand continue to demonstrate significant gaps in key areas such as conceptual understanding, culturally responsive and technology-integrated lesson planning, inclusive instructional delivery, authentic assessment, and classroom management (Channarong, 2010; Office of the Education Council, 2017). These deficiencies are particularly concerning given the growing recognition that empowered learning requires culturally and contextually relevant teaching strategies that foster learner agency, participation, and critical thinking (Gay, 2010; Ladson-Billings, 1995). Studies have shown that foreign teachers in Thailand often struggle to adapt instructional methods to the Thai educational context, frequently due to limited exposure to effective training on culturally responsive pedagogy and digital integration (Hallinger & Lee, 2011; Ninno, 2016). Also, many foreign teachers, particularly those teaching English as a foreign language (EFL) do not have education-specific degrees in teacher education and training, thus lacking pedagogical skills and learner empowerment strategies. Moreover, the lack of structured, context-specific professional development programs for foreign teachers contributes to persistent instructional challenges and undermines their capacity to meet diverse student needs (Suwannathat, 2015). Without targeted support, many foreign educators rely on generic or transplanted teaching models that fail to resonate with local learners, thereby limiting their ability to create empowering, student-centered classrooms.

To solve this problem and help foreign teachers in Thailand improve their teaching, there is a need to create a program that focuses on cultural understanding, uses technology, and encourages teachers to work and learn together. Working with other teachers and sharing ideas would also help them feel more supported and confident. With the right training and tools, foreign teachers can build the skills they need to teach more effectively and help their students become more active, motivated, and successful learners. This study, therefore, proposes the development of a culturally responsive, technology-assisted peer coaching collaborative program specifically tailored to their unique needs and teaching contexts. This program provides structured, ongoing professional learning opportunities that emphasize culturally grounded pedagogy, learner-centered instructional design, and effective integration of digital tools. Through collaborative reflection, peer observation, and shared lesson planning, foreign teachers can develop a deeper

understanding of effective instructional approaches and strategies in various contexts, Thai educational values, student needs, and classroom realities. Technology can further enhance access to resources, enable virtual collaboration, and support differentiated professional learning. A combination of peer support with cultural and digital competencies empowers foreign teachers to deliver more relevant, engaging, and inclusive instruction, thereby closing the gap in instructional quality and fostering greater learner empowerment across diverse Thai classrooms.

Peer coaching has proven to be an effective approach for enhancing teachers' instructional skills for learner empowerment by fostering collaboration, reflection, and the sharing of best practices. According to Lofthouse, Leat, and Towler (2010), Showers and Joyce (1996), and Ackland (1999), teachers engaged in peer coaching are more likely to adopt reflective practices, experiment with innovative pedagogies, and implement strategies that promote learner autonomy and active engagement. Peer coaching thus creates a supportive learning community where teachers can exchange experiences, model effective practices, and offer constructive feedback strengthening both professional growth and instructional capacity. Similarly, collaborative learning communities have been shown to enhance teachers' instructional skills by promoting continuous professional development, joint problem-solving, and the collective analysis of learner outcomes. As noted by Vescio, Ross, and Adams (2008) and DuFour (2004), such communities encourage teachers to refine their instructional practices, reduce professional isolation, and engage with diverse perspectives in ways that foster continuous improvement and learner empowerment.

However, existing professional development programs often fail to respond to the particular needs of foreign teachers. Many initiatives are too generic, overlooking the cultural challenges these teachers face when adapting to new educational contexts. Others lack sufficient opportunities for practical application, sustained peer support, or the integration of technology as a tool for feedback and collaboration. These limitations mean that foreign teachers often remain underprepared to navigate the intersection of cultural adaptation, instructional innovation, and digital teaching demands. To address these gaps, the proposed culturally responsive, technology-assisted peer coaching collaborative program provides a targeted intervention that integrates cultural awareness, pedagogy, collaboration, and digital tools. Unlike conventional programs, it is designed to offer both individualized support through direct peer feedback and coaching and collective learning opportunities within collaborative communities. This dual structure not only enhances instructional practices but also builds a network of mutual support, ensuring that foreign teachers can grow professionally while empowering their learners more effectively.

In line with these challenges and gaps, the present study set out to achieve four aims. Firstly, it examined the needs, challenges, and contextual factors that shape foreign teachers' instructional practices for learner empowerment in Thailand. Second, it developed and assessed the quality of a culturally responsive, technology-assisted peer coaching collaborative program tailored to these needs. Third, it implemented the program and investigated its effectiveness in enhancing foreign teachers' instructional skills. Finally, it evaluated the program's overall impact, including teachers' satisfaction and perceptions. Together, these objectives guided the design of the study and framed its contribution to both professional practice and the scholarly literature on teacher development in multicultural contexts. This study is novel in that it integrates culturally responsive pedagogy, peer coaching, and technology-assisted professional development into a single framework specifically tailored for foreign teachers in Thailand, addressing a critical gap in the literature and practice where no such comprehensive model currently exists.

2. Literature review

2.1. Professional teacher development programs

Professional Teacher Development (PTD) plays a vital role in enhancing teachers' instructional skills and improving student learning over time. Effective PTD extends beyond one-time workshops. It must be ongoing, targeted, and directly linked to teachers' daily classroom experiences (Desimone, 2009). Research indicates that when professional development emphasizes active learning, collaboration, and alignment with curriculum goals, it results in better teaching practices and increased teacher confidence (Garet et al., 2001). However, for lasting impact, PTD must also consider the cultural and contextual realities in which teachers operate (National Staff Development Council, 2001). Strategies such as peer coaching, team lesson planning, and shared reflection foster community and promote continuous growth (Avalos, 2011). In today's classrooms, PTD must also prepare teachers to effectively engage with diverse learners and utilize technology to enhance instruction. Culturally responsive development helps teachers create inclusive, equitable classrooms that honor and reflect learners' backgrounds (Gay, 2010; Ladson-Billings, 1995). At the same time, digital tools offer opportunities for flexible, interactive learning, supporting innovation in teaching methods (Cavanaugh, 2001; Guskey, 2000). When cultural awareness and technology integration are combined in teacher development, teachers are better prepared to meet the demands of modern classrooms and empower all learners.

2.2. Peer coaching as a model for professional development

Peer coaching has been widely recognized as an effective and human-centered approach to teacher professional development because it emphasizes collaboration, reflection, and mutual support rather than hierarchical supervision (Lofthouse, Leat, & Towler, 2010; Showers & Joyce, 1996). By enabling teachers to observe one another, share expertise, and exchange constructive feedback, peer coaching bridges the gap between theory and classroom practice, making professional learning directly relevant to real-world instructional challenges (Blazar & Kraft, 2017; Joyce & Showers, 2002). Research further indicates that it reduces professional isolation, builds confidence in implementing learner-centered strategies, and fosters reflective thinking and professional dialogue, all of which enhance instructional quality and collegial relationships (Borko, 2004; Costa & Garmston, 2002; Hawley & Valli, 1999; Hsieh et al., 2021; Van Nieuwerburgh, 2012). Moreover, its embedded, practice-oriented nature makes it more sustainable than traditional workshop-based training, while its flexibility allows adaptation to individual teacher goals and institutional needs (Glickman, 2002; Vescio, Ross, & Adams, 2008). However, successful peer coaching depends on well-defined structures, appropriate training, and strong interpersonal trust (Tschannen-Moran & Hoy, 2007). For foreign teachers in Thailand, who often face limited mentorship and few collaborative networks, integrating peer coaching into professional development addresses both the need for continuous growth and the challenge of professional isolation identified in the needs assessment. Consequently, these insights provide a robust theoretical and practical foundation for the culturally responsive, technology-assisted peer coaching framework developed in this study, as it aims to empower teachers, strengthen reflective practice, and ultimately enhance learner outcomes in Thai educational contexts.

2.3. Collaborative learning communities

Collaborative Learning Communities (CLCs) are essential for effective teacher development because they foster shared inquiry, mutual support, and collective problem-solving, creating a structured environment where professional growth is sustained and contextualized (Hord, 2004). Within these communities, peer coaching emerges as a highly

effective model of professional learning, promoting reflection, collaboration, and reciprocal growth (Blazar & Kraft, 2017). Through trust-based, non-evaluative interactions, teachers observe each other, provide constructive feedback, and engage in authentic, real-time reflection that strengthens classroom practice (Hawley & Valli, 1999). This process not only enhances pedagogical understanding and instructional decision-making but also cultivates autonomy, a safe space for experimentation, and a professional culture grounded in trust, respect, and shared goals (Costa & Garmston, 2002; Sparks & Hirsh, 2000). Peer coaching additionally supports teacher well-being, meaningful dialogue, and continuous learning, thereby addressing issues of professional isolation commonly experienced by foreign teachers in Thailand (Van Nieuwerburgh, 2012). Complementing peer coaching, CLCs provide structured opportunities to analyze practice, co-develop solutions, and use evidence to inform instruction, which increases collective efficacy and positively impacts student outcomes (Lieberman & Pointer Mace, 2008; Vescio, Ross, & Adams, 2008). Teachers engaged in these communities report higher motivation, improved instructional strategies, and greater student engagement (Borko, 2004), while the collaborative and innovative nature of CLCs encourages experimentation with new ideas in a safe and supportive setting (Johnson, Johnson, & Holubec, 1990). Successful implementation of CLCs depends on clear goals, regular collaboration, and a foundation of trust (Hord, 2004). Taken together, these insights highlight the critical role of peer coaching within CLCs and justify the need for a culturally responsive, technology-assisted peer coaching framework in this study, as it aims to empower foreign teachers, enhance reflective practice, and improve learner outcomes in Thai educational contexts.

2.4. Culturally responsive pedagogy in professional development

Culturally Responsive Pedagogy (CRP) is a critical component of effective professional development, particularly in diverse educational contexts where learners bring varied cultural identities, experiences, and needs (Gay, 2010). At its core, CRP encourages teachers to design instruction that respects, reflects, and values these identities, thereby promoting equity, engagement, and academic success. Beyond simply including cultural content, CRP challenges teachers to examine their assumptions, confront systemic inequities, and transform their instructional practices to better serve all learners (Ladson-Billings, 1995; Sleeter, 2011). It also requires adopting a mindset that seeks to understand students' lived experiences and aligns teaching strategies accordingly, fostering meaningful teacher-learner relationships and inclusive classrooms (Banks, 2006b; Villegas & Lucas, 2002a, 2002b). Research indicates that CRP is most effective when integrated into sustained professional development rather than one-off workshops, emphasizing ongoing collaborative learning, reflection, and open dialogue about personal and institutional biases (Sleeter, 2011). By embedding CRP in professional learning, teachers develop the cultural competence and reflective capacity necessary to create learning environments where all students feel recognized, respected, and empowered. In the context of this study, incorporating CRP into a culturally responsive, technology-assisted peer coaching framework ensures that professional development not only enhances instructional skills but also equips foreign teachers in Thailand to engage meaningfully with diverse learners, fostering equity, inclusion, and improved learner outcomes.

2.5. Technology-assisted professional development

Technology-Assisted Professional Development (TAPD) is increasingly recognized as a flexible and impactful approach to teacher learning, particularly for educators in diverse or geographically dispersed settings (Desimone & Garet, 2015). By leveraging platforms such as virtual coaching, online courses, video-based feedback, and digital professional communities, TAPD provides continuous, tailored learning while enabling timely collaboration, which is especially

beneficial for foreign teachers navigating cultural, linguistic, or instructional challenges (Koh & Chai, 2014; Liu, 2012). Digital tools also facilitate access to culturally relevant teaching materials and inclusive professional networks, allowing educators to share strategies and build mutual support across cultural boundaries (Kumi-Yeboah et al., 2020). Research further demonstrates that technology-enhanced peer coaching can improve teacher confidence, motivation, and classroom effectiveness, aligning with sociocultural theory by emphasizing learning as inherently social and shaped by cultural context (Donnelly & Boniface, 2013; Vygotsky, 1978). Online professional learning spaces additionally support collaborative knowledge-building that is context-sensitive and sustainable (Trust & Horrocks, 2016). In Thailand, where some schools are rural or difficult to reach, TAPD bridges physical and cultural distances, providing consistent professional development while fostering emotional resilience and intercultural competence among foreign educators. Integrated with peer coaching and culturally responsive pedagogy, TAPD underpins a holistic, scalable, and sustainable framework for professional learning, directly informing this study's culturally responsive, technology-assisted peer coaching intervention aimed at enhancing instructional skills and learner outcomes.

2.6. Teachers' instructional skills

Strong instructional skills are essential for effective teaching, particularly in today's diverse and multicultural classrooms, as they enable teachers to design engaging lessons, differentiate instruction, foster critical thinking, and create inclusive, student-centered learning environments (Darling-Hammond, Hyler, & Gardner, 2017). Central to these skills is Pedagogical Content Knowledge (PCK), which allows teachers to present complex subject matter in ways that are meaningful and accessible to all learners (Ball, Thames, & Phelps, 2008; Shulman, 1987). Developing these competencies requires high-quality, sustained, and reflective professional development that connects theory to practice (Avalos, 2011; Desimone, 2009). For foreign teachers, effective instruction also demands cultural competence, including an understanding of local values, classroom norms, and student learning styles (Gay, 2018; Lucas & Villegas, 2011). Peer coaching and collaborative learning communities provide an ideal framework for cultivating these skills through shared practice, professional dialogue, and constructive feedback in supportive, non-evaluative environments (Lofthouse, 2019). When combined with technology, such as digital platforms for real-time feedback, adaptive instruction, and formative assessment, peer coaching becomes even more effective in promoting reflective, responsive teaching (Koh & Chai, 2014). In the Thai context, where foreign teachers navigate complex cultural and linguistic dynamics, integrating culturally responsive pedagogy with technology-assisted peer coaching offers a scalable, sustainable professional development model. This integrated approach directly informs the current study's framework by enabling foreign teachers to enhance their instructional skills, foster inclusive and engaging learning environments, and ultimately empower diverse learners more effectively.

2.7. Learner empowerment

Learner empowerment is a critical factor in fostering student autonomy, intrinsic motivation, and meaningful classroom engagement, as it arises from students' perceptions of competence, task relevance, and their ability to influence learning outcomes (Deci & Ryan, 2000; Frymier, Shulman, & Houser, 1996; Zimmerman, 2002). In culturally and linguistically diverse contexts such as Thailand, promoting empowerment also requires teaching practices that affirm students' cultural identities and support inclusive participation (Gay, 2018; Ladson-Billings, 1995; Cummins, 2001). Pedagogical approaches, including collaborative learning, inquiry-based strategies, and the integration of technology, contribute to learning environments where students feel respected, engaged, and in control of their learning (Hammond, 2015;

Vygotsky, 1978). Moreover, positive teacher-student relationships built on trust, empathy, and cultural understanding enhance learners' self-confidence and belief in their abilities (Wang & Eccles, 2013). Technology-assisted peer coaching offers teachers a structured pathway to reflect on their instructional practices and implement culturally responsive adjustments, supporting the design of learner-centered activities that foster student voice and empowerment (Trust & Horrocks, 2016; Zhao, 2012). While research supports the individual benefits of culturally responsive pedagogy (CRP), peer coaching, and technology-assisted professional development (TAPD), few professional development models integrate all three in ways that address the specific needs of foreign teachers in multicultural classrooms. To address this gap, the present study introduces the culturally responsive, technology-assisted peer coaching (CR-TAPC) program, which synthesizes evidence from multiple fields to provide a sustainable, context-sensitive framework for enhancing foreign teachers' instructional skills and promoting learner empowerment. This integrated approach informs the study's design and highlights its contribution to both professional practice and the scholarly literature on teacher development in diverse educational contexts.

3. Methodology

3.1. Research design

This study used a mixed-methods design, which was ideal for its goal of developing, implementing, and evaluating a culturally responsive, technology-supported peer coaching program for foreign teachers in Thailand. A mixed-methods approach was chosen because it combines the strengths of both qualitative and quantitative research, allowing for a more thorough and comprehensive understanding of the issue. Qualitative methods, including semi-structured interviews, focus group discussions, and classroom observations, were employed to explore teachers' needs, challenges, and contextual realities in depth. These insights provided a valuable foundation for designing the professional development program and helped develop quantitative tools. Quantitative methods, such as expert evaluation ratings, pre- and post-test assessments, and satisfaction surveys, were then used to evaluate the program's quality, feasibility, and effectiveness. The integration of qualitative and quantitative data was essential for this study. Qualitative findings guided the program design and aided in interpreting the quantitative results, while quantitative measures confirmed the program's effectiveness and strengthened the conclusions. Using a mixed-methods approach ensured that the study was both grounded in context and rigorously supported by data, providing a more complete picture of how the program improved foreign teachers' instructional skills and their ability to empower learners. The research was conducted following these steps.

Step 1: Study the needs, challenges, and contextual factors that influence foreign teachers' instructional practices for learners' empowerment in Thailand

This step focused on understanding the real-world experiences of foreign teachers by studying their needs, challenges, and the contextual factors that shape their instructional practices and ability to empower learners in their classrooms. This process unfolded over **four weeks**, beginning with the collection of data through surveys, interviews, focus group discussions, and classroom observations involving 58 foreign teachers and 12 school administrators from both public and private schools. The goal was to gain a clear picture of the day-to-day realities these teachers face, including cultural barriers, instructional gaps, limited professional support, and access to technology. Particular attention was paid to how these factors affect their confidence, teaching strategies, classroom management, and ability to motivate and engage learners meaningfully. The information obtained here helped identify

specific areas where support and development were most needed, such as culturally responsive teaching, lesson planning, and integrating digital tools etc. This foundational step ensured that the design of the professional development program would be truly responsive to the lived experiences and unique challenges of foreign teachers in Thailand classrooms.

Step 2: Developing and assessing the quality of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learner empowerment in Thailand

Step 2 involved the development and quality assessment of the culturally responsive, technology-assisted peer coaching collaborative program aimed at enhancing foreign teachers' instructional skills for learner empowerment in Thailand. This process unfolded over six weeks and consisted of three main phases beginning with a critical review and analysis of relevant theories, approaches and existing models in culturally responsive pedagogy, peer coaching, and technology-assisted professional development. Drawing from both the findings of Step 1 and existing literature, the components of the program were identified using deductive and inductive approaches for data collection. The program was then systematically developed through three main phases: (1) conceptualization and identification of program components, (2) program design and expert validation for appropriateness and (3) feasibility study of the program through focus group discussions with experts. The program was further enhanced based on data obtained during the feasibility focus group discussions.

The development of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learner empowerment in Thailand began with the conceptualization and identification of core components. This phase involved a comprehensive review of literature on culturally responsive pedagogy (Gay, 2018; Ladson-Billings, 1995), peer coaching models (Joyce & Showers, 2002), and technology-integrated professional development (Desimone & Garet, 2015; Trust & Horrocks, 2016). The conceptual framework was grounded in constructivist and sociocultural theories, including Vygotsky's (1978) notion of socially mediated learning and Mezirow's (1997) theory of transformative learning, both of which emphasize reflection, collaboration, and contextual learning. Based on this theoretical and empirical foundation, five core components were identified and established as essential to the program's design:

Principles emphasizing the importance of peer coaching, collaborative reflection, and culturally responsive interaction in helping foreign teachers develop effective instructional practices and supporting the idea that foreign teachers learn best when they interact with supportive peers in a structured, culturally aware environment, rather than learning in isolation.

Objective: focusing on enhancing foreign teachers' instructional skills for learner empowerment capacity.

Structured content and learning modules consisting of practical, relevant, culturally grounded, and pedagogically sound and carefully designed to align with the needs, challenges, and contextual realities.

Learning experiences and activities focused on enhancing foreign teachers' instructional skills for learner empowerment through culturally responsive, constructivist, and technology-enhanced strategies, implemented via peer coaching, reflective practice, and collaborative planning for sustainability. The learning experiences and activities were obtained from the synthesis of the related approaches.

Instructional media support and enrich the learning experience by integrating tools and resources that align with both the cultural context and technological needs of foreign teachers. The instructional media used in the program were selected to be practical, accessible, and relevant to real classroom settings in Thailand. These media included both digital tools and traditional resources, such as interactive presentations,

video demonstrations, online collaboration platforms.

Assessment and evaluation, incorporating formative and summative methods that assess not only outcomes but also gradual improvements in all aspects of instructional skill development.

The learning experiences and activities were designed around six steps consisting of 1. cultural awareness and reflective practice, 2. constructivist-based teaching strategy workshops, 3. culturally responsive and technology-enhanced instructional design, 4. peer coaching cycles and collaborative learning, 5. empowerment-focused teaching strategies and 6. Showcase, reflection, and sustainability planning. The learning experiences and activities were designed by integrating four foundational frameworks to address the instructional needs of diverse classrooms. Drawing from Culturally Responsive Teaching (Gay, 2010; Ladson-Billings, 1995), activities such as cultural awareness, reflective teaching, and culturally integrated instructional design aimed to help teachers affirm learners' identities and adapt to local cultural contexts. Peer coaching cycles with observation and feedback were grounded in the collaborative models of Joyce & Showers (1996) and Knight (2007) to promote shared professional growth. Constructivist pedagogy and learner empowerment (Deci & Ryan, 1985; Freire, 1970) informed the design of interactive workshops and empowerment-focused strategies to encourage student voice and active learning. Finally, technology-assisted instruction and coaching (Hughes et al., 2005; Mishra & Koehler, 2006) guided the integration of digital tools into culturally responsive instructional design, enhancing engagement and sustainability through reflection, showcasing, and planning.

Step 3: Implementing and studying the effectiveness of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learners' empowerment in Thailand

The developed and validated culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learners' empowerment in Thailand was implemented with 68 foreign teachers across various Thai schools. Before the implementation process, a pre-test was administered and teachers' scores recorded. The program implementation process lasted 24 h over two phases, combining online and in-person learning. The first phase, conducted via Google Meet, covered instructional theory, culturally responsive pedagogy, digital tools, lesson planning, classroom management, interactive teaching, and assessment strategies. The second, in-person phase emphasized practice through peer observations, collaborative lesson planning, micro-teaching, feedback, and guided reflection. The practical implementation process was based on establishing a coaching relationship, micro-teaching, shared goals and vision, lectures, creating a supportive learning environment and community capacity, knowledge sharing and collaborative inquiry, reflection on practice and feedback, and progress monitoring, evaluation, and closure. A variety of activities that focused on enhancing teachers' instructional skills and learner empowerment capacity were utilized during the implementation process with all participants actively involved throughout the process.

To measure impact, a post-test evaluated improvements in teachers' instructional skills for learner empowerment, and the data were analyzed with a comparison of the pre- and post-test scores to identify improvements.

Step 4: Evaluation of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learner empowerment in Thailand.

The program evaluation studied participants' satisfaction and perceptions of a culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learner empowerment. This evaluation was conducted by

administering questionnaires and semi-structured interviews. These questionnaires and semi-structured interviews were developed drawing from instructional skills for learners’ empowerment enhancement. All items of the questionnaire and semi-structured interview were validated by experts to ensure the relevance and clarity of the items; some items were revised or rephrased accordingly to effectively capture the intended construct. Upon completion of the implementation process, all participants were required to complete the satisfaction questionnaire. Moreover, perception interviews were conducted both individually and in groups to further investigate and validate the findings.

4. Participants

The culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers’ instructional skills for learner empowerment was implemented with 68 foreign teachers from various schools in Thailand, selected through voluntary participation. An open invitation was extended to foreign teachers currently working in different educational settings across the country, and those who were willing and interested chose to participate in the study. This sampling method was used to ensure that participants were genuinely motivated to share their experiences and insights while also respecting ethical considerations by allowing them to provide informed consent. Voluntary sampling was a practical and efficient approach for accessing a diverse group of foreign teachers working in different regions and school contexts. To be eligible, teachers needed to be currently employed in a Thai school and willing to fully engage in both the online and in-person components of the program.

5. Research instruments

To achieve the study’s research objectives, namely, examining the needs and challenges faced by foreign teachers, developing and assessing the quality of a culturally responsive, technology-assisted peer coaching program, implementing and studying its effectiveness, and evaluating the program, a variety of qualitative and quantitative research instruments were developed and employed.

The first set of research instruments consisted of semi-structured interviews developed to investigate the needs, challenges, and contextual factors shaping foreign teachers’ instructional practices aimed at empowering learners in Thailand. The first interview guide focused on eliciting rich, qualitative insights into foreign teachers’ instructional strategies, the barriers they face, and the contextual realities of teaching within the Thai education system. It comprised 11 open-ended items grouped into three key domains: instructional practices and learner empowerment strategies, challenges, and professional development needs.

The second research instrument was the culturally responsive, technology-assisted peer coaching collaborative professional development program, which consisted of six essential components: principles, objectives, content structure, learning experiences and activities, instructional media, and assessment and evaluation. This structured program served as the foundation for implementation and ongoing improvement.

Evaluation forms for the professional development program and its accompanying manual were used to assess the relevance, coherence, cultural appropriateness, and usability of the materials. These forms were completed by five experts and practitioners to ensure the program met quality standards and contextual needs.

To evaluate both theoretical understanding and practical teaching skills for learner empowerment, an instructional skills assessment pre- and post-test was developed. This two-part instrument included a 30-item multiple-choice test assessing knowledge of instructional theories, learner-centered pedagogy, classroom management, and assessment strategies. The second part consisted of a practical teaching task in which teachers designed and delivered a lesson, demonstrating their

ability to apply strategies that foster learner engagement, autonomy, and critical thinking. Experts assessed their teaching using structured criteria, followed by reflective feedback to support continuous improvement.

Also, a micro-teaching demonstration observation form constituted one of the instruments. The observation form was used to evaluate teachers’ instructional techniques and their effects on student empowerment. It focuses on lesson planning and clarity of objectives, instructional delivery methods, classroom management, and the use of learner-centered strategies that promote active participation, critical thinking, and student autonomy. Observers assess how effectively the teacher creates an inclusive and supportive learning environment, encourages student voice and decision-making, and fosters collaboration and motivation.

A satisfaction questionnaire was also administered to all program participants to evaluate their satisfaction level with the training experience. This 12-item questionnaire, based on a 5-point Likert scale, assessed six aspects, including: learning process and learning activities, content, instructional atmosphere and trainers, instructional media, assessment and enhancement of teachers’ instructional skills for learner empowerment. The data gathered informed ongoing enhancements to the program.

The perception semi-structured interview was designed to explore participants’ experiences, perceptions, and suggestions regarding the program’s effectiveness in enhancing instructional skills for learner empowerment. The interview consists of seven open-ended questions that encourage teachers to reflect on their overall experience, the impact on their teaching practices, and the value of the program’s learning content, process, and assessment. It also examines how peer feedback influenced their approach to empowering students, identifies the most effective components of the program, and gathers constructive suggestions for improvement. This qualitative tool provides in-depth insights to inform future program refinement and ensure alignment with teachers’ professional learning needs.

The research instruments are summarized and presented in the table below.

Instrument	Purpose	Structure/ Components	Focus areas
Needs Analysis Semi-Structured Interview	To explore needs, challenges, and contextual factors shaping foreign teachers’ practices	11 open-ended items in 3 domains	Instructional practices & learner empowerment strategies; Challenges; Professional development needs
Culturally Responsive, Technology-Assisted Peer Coaching Program	To provide and implement a professional development intervention	6 components: principles, objectives, content structure, learning experiences & activities, instructional media, assessment & evaluation	Structured framework for program implementation and continuous improvement
Program & Manual Evaluation Forms	To assess quality, cultural appropriateness, and usability of the program materials	Expert evaluation (5 experts/ practitioners)	Relevance, coherence, cultural appropriateness, usability
Instructional Skills Assessment (Pre- & Post-Test)	To evaluate theoretical knowledge and practical teaching skills	Two parts: (1) 30-item MCQ test; (2) Practical teaching task with expert evaluation	Instructional theories; Learner-centered pedagogy; Classroom management; Assessment strategies;

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(continued)

Instrument	Purpose	Structure/ Components	Focus areas
Micro-Teaching Observation Form	To observe and assess instructional techniques and empowerment strategies	Structured observation criteria	Application in teaching Lesson planning & objectives; Delivery methods; Classroom management; Learner-centered strategies; Student voice & collaboration
Satisfaction Questionnaire	To measure participants' satisfaction with the program	12 items, 5- point Likert scale, covering 6 aspects	Learning process & activities; Content; Instructional atmosphere & trainers; Media; Assessment; Skill enhancement
Perception Semi- Structured Interview	To gather participants' reflections on program effectiveness and suggestions	7 open-ended questions	Experiences & perceptions; Impact on teaching; Value of program; Peer feedback influence; Effective components; Suggestions for improvement

6. Data analysis

The data analysis for this study aligned with its four objectives and used both qualitative and quantitative approaches to provide a comprehensive understanding of the program’s impact.

1. Semi-structured interviews explored foreign teachers’ needs, challenges, and perceptions of the peer coaching program. The interviews were transcribed verbatim and examined through thematic content analysis to identify recurring themes. These themes captured teachers’ experiences, perceived benefits, and obstacles in implementing instructional strategies. Findings were triangulated with relevant literature to validate interpretations and provide context.
2. Expert evaluations and teacher satisfaction questionnaires were analyzed using descriptive statistics, including mean scores and standard deviations. A mean score of 3.50 or above indicated program appropriateness and participant satisfaction. Teachers’ instructional skills for learner empowerment were also assessed quantitatively using descriptive statistics such as mean, standard deviation, and percentages.
3. The qualitative themes and quantitative results were interpreted together to produce a holistic understanding of the program’s effectiveness. For example, improvements in instructional skills scores reflected interview themes showing increased confidence, engagement, and application of peer coaching strategies. Similarly, high satisfaction scores corresponded with qualitative reports of perceived usefulness and relevance of the program content. Combining these data sources allowed the study to measure the program’s impact and explain how and why it enhanced teachers’ instructional skills and learner empowerment.

7. Research findings

This study aimed to investigate the contextual needs and challenges of foreign teachers and to develop, implement, and evaluate a culturally responsive, technology-assisted peer coaching collaborative program to enhance their instructional skills for learners’ empowerment in Thailand. This section presents the findings of a study according to the

research objectives as follows.

8. Results of studying the needs, challenges, and contextual factors that influence foreign teachers’ instructional practices for learners’ empowerment in Thailand

A study of the needs, challenges, and contextual factors that influence foreign teachers’ instructional practices for learners’ empowerment in Thailand revealed several critical professional development needs. A majority of teachers cited a need for training in cultural responsiveness (81 %), lesson planning and classroom management (76 %), assessment strategies (81 %), and peer support (72 %). Other priorities included integrating digital tools (69 %), understanding Thai education policy (64 %), and strategies to promote learner empowerment (61 %).

Four major challenging areas were revealed in the study, including instruction, cultural adaptation, institutional support, and technology integration. Instructionally, many teachers struggled to adapt content to local contexts and align methods with Thai learning norms. Limited exposure to culturally relevant digital tools further hindered their effectiveness. Culturally, language barriers and unfamiliar professional norms complicated collaboration with Thai colleagues and parents. Many teachers also expressed uncertainties about appropriate approaches to discipline and student engagement and empowerment.

Institutionally, teachers often felt isolated, with minimal access to mentoring or involvement in curriculum planning. High turnover rates further disrupted team cohesion and limited relationship-building. Technological challenges included inconsistent access to digital tools, weak infrastructure, and a lack of tailored digital content. While many were skilled with platforms like Google Classroom, Kahoot, and Zoom, these tools were underutilized due to connectivity issues and insufficient support.

The findings also revealed that many foreign teachers had only a surface-level grasp of pedagogical concepts, teaching methods, and learning approaches. This often resulted in inaccurate or overly simplified explanations during lessons. Additionally, teachers struggled to connect lesson content to real-world and meaningful contexts for their learners. There were noticeable gaps in their ability to empower learners, plan for diverse needs, and design lessons with clear objectives. Technology was rarely integrated effectively, and classroom management strategies were often lacking or inconsistently applied. Furthermore, many teachers had limited understanding of assessment techniques and found it difficult to offer students meaningful, constructive feedback.

The thematic analysis of interviews revealed four key patterns: (1) widespread professional isolation; (2) strong interest in collaborative growth models such as peer coaching and reflective practice; (3) willingness to use technology despite systemic barriers; and (4) persistent gaps in cultural orientation and language support. In summary, the findings highlight the urgent need for a culturally responsive, technology-supported professional development program specifically designed for foreign teachers in Thailand. Such a program must address instructional, cultural, institutional, and technological challenges while promoting inclusive, learner-centered practices that empower learners in diverse classrooms.

9. Results of developing and assessing the quality of a culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers’ instructional skills for learners’ empowerment in Thailand

9.1. Results of program development and quality assessment

The results of the development and quality assessment of the culturally responsive, technology-assisted peer coaching collaborative program identified six main components: (1) principles, (2) program

objectives, (3) content and structure, (4) learning experiences and activities, (5) instructional media, and (6) assessment and evaluation. The learning experiences and activities, or the program's instructional process, included 1) concept explanation, cultural awareness, and reflective practices, 2) constructivist teaching strategy workshops, 3) culturally and technologically integrated instructional design, 4) peer coaching cycles with observation and feedback, empowerment-focused teaching strategies, and 6) showcase, reflection, and sustainability planning. The culturally responsive, technology-assisted peer coaching collaborative program is shown in Fig. 1 below.

9.2. Results of program quality assessment

The results of the culturally responsive, technology-assisted peer coaching collaborative program quality assessment by experts are presented in Table 1 above, revealing that the overall appropriateness of the developed program was rated at the highest level ($\bar{x} = 4.60$, $SD = 0.10$). An analysis of individual program components revealed that the

principle ($\bar{x} = 4.67$, $SD = 0.24$), objectives ($\bar{x} = 4.073$, $SD = 0.15$), structured content and learning modules ($\bar{x} = 4.53$, $SD = 0.45$), learning experiences and activities ($\bar{x} = 4.53$, $SD = 0.30$), instructional media ($\bar{x} = 4.53$, $SD = 0.18$) and assessment and evaluation ($\bar{x} = 4.60$, $SD = 0.37$) were all at the highest level of appropriateness. Apart from the appropriateness assessment, a feasibility study was conducted, revealing that the program and its components were highly feasible in enhancing teachers' instructional skills for learner empowerment. Summarily, experts rated the program highly appropriate overall, noting its clear objectives, strong theoretical grounding, and focus on learner empowerment. Content, activities, media, and assessments were all judged effective in supporting teacher development, confirming the program's quality and feasibility for enhancing instructional skills. The findings indicate that teachers' instructional skills for learner empowerment improved markedly after the program. Posttest scores exceeded 80 % across all components, with large effect sizes confirming both statistical and practical significance. The strongest gains were in lesson planning, instructional delivery, and classroom management, showing

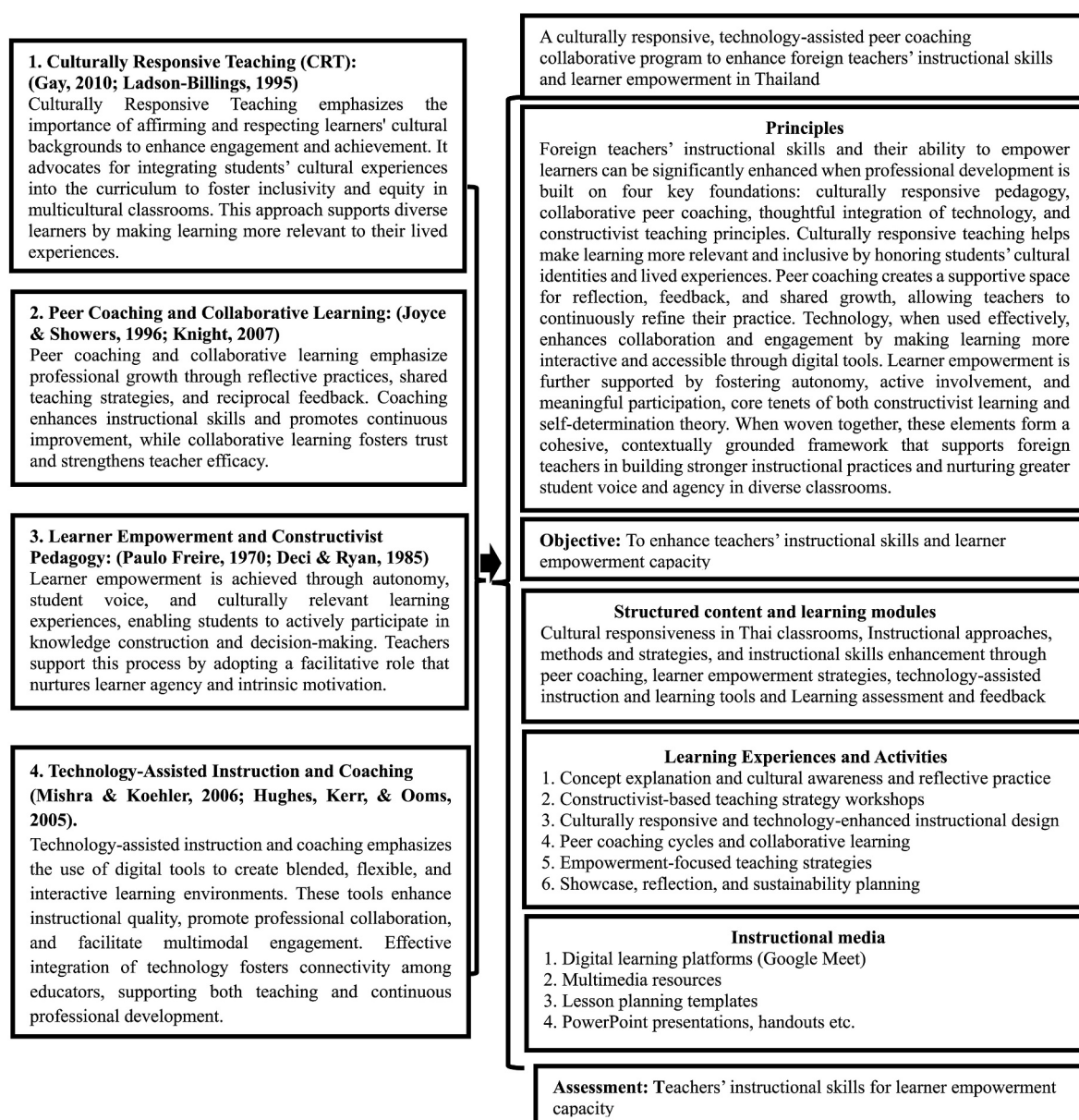


Fig. 1. A culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills and learner empowerment in Thailand.

greater confidence in designing lessons, applying learner-centered methods, and fostering supportive classrooms. Reduced variability also suggests more consistent practice. Overall, the program proved highly effective in strengthening teacher capacity to empower learners.

10. Results of implementation and study of the effectiveness of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers’ instructional skills for learners’ empowerment in Thailand

Across all components, posttest means exceeded 80 %, while the reduction in standard deviations indicated greater consistency among teachers’ performance after the intervention. Taken together, these results provide strong evidence that the program was not only statistically effective but also educationally meaningful, equipping foreign teachers with the knowledge, skills, and confidence to empower learners in diverse classroom contexts.

11. The results of evaluating the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers’ instructional skills for learners’ empowerment in Thailand

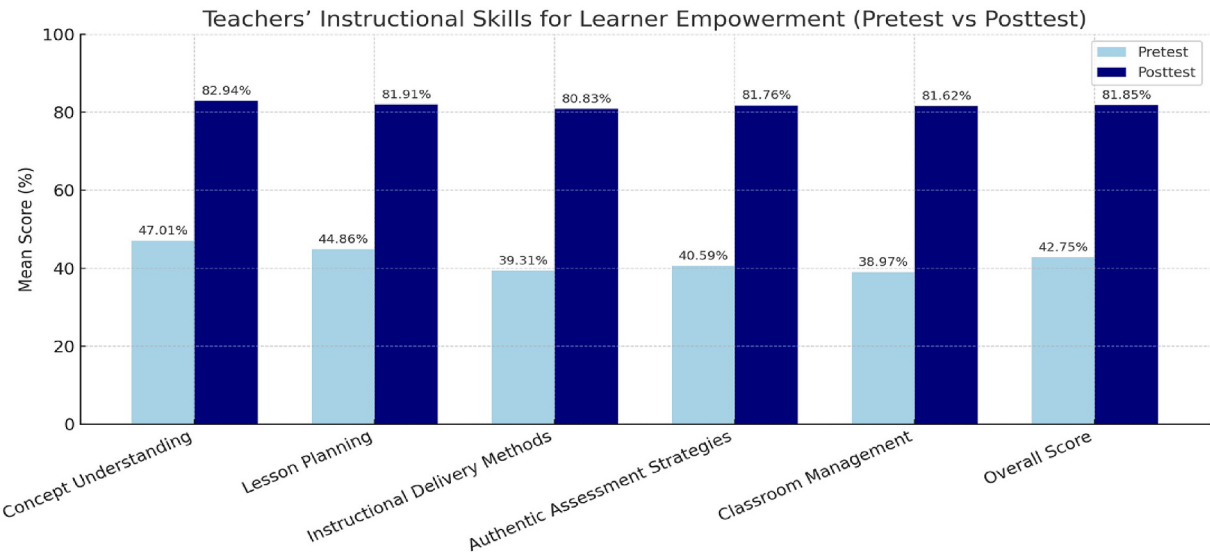


Table 2 and the bar chart illustrate the outcomes of the program, showing that teachers’ instructional skills for learner empowerment improved significantly and consistently after participating in the culturally responsive, technology-assisted peer coaching program. Overall performance increased from 42.75 % at the pretest ($M = 42.750$, $SD = 2.255$) to 81.85 % at the posttest ($M = 82.853$, $SD = 1.363$), representing a 39.1 percentage-point gain. This improvement was highly significant, $t(67) = 122.76$, $p < .001$, with a 95 % CI [39.01, 40.93], and a very large effect size ($d = 14.89$), underscoring the program’s strong practical impact. When broken down by component, the results show a clear and consistent pattern of progress. Teachers’ conceptual understanding rose from 47.01 % at pretest to 82.94 % at posttest, $t(67) = 72.87$, $p < .001$, 95 % CI [10.31, 11.37], $d = 8.84$, demonstrating substantial gains in grasping the principles of culturally responsive and technology-integrated teaching. Lesson planning improved from 44.86 % to 81.91 %, $t(67) = 41.91$, $p < .001$, 95 % CI [7.03, 8.82], $d = 5.08$, reflecting teachers’ strengthened ability to design coherent, culturally grounded lessons. Instructional delivery advanced from 39.31 % to 80.83 %, $t(67) = 50.53$, $p < .001$, 95 % CI [12.22, 13.70], $d = 6.13$, suggesting more effective use of learner-centered methods in classroom practice. Similarly, authentic assessment strategies increased from 40.59 % to 81.76 %, $t(67) = 38.16$, $p < .001$, 95 % CI [3.74, 4.46], $d = 4.63$, indicating that teachers developed stronger skills in applying meaningful and performance-based assessments. Classroom management demonstrated the greatest relative improvement, rising from 38.97 % to 81.62 %, $t(67) = 45.96$, $p < .001$, 95 % CI [3.95, 4.63], $d = 5.57$, showing that teachers became more capable of fostering inclusive and supportive learning environments.

empowerment in Thailand

Table 3 presents the results of the program evaluation, indicating that overall teacher satisfaction with the program and its implementation process was at the highest level, as the results revealed that teachers were highly satisfied with the culturally responsive, technology-assisted peer coaching collaborative program. Overall, the program received the highest average satisfaction mean score of 4.52. Teachers found the learning process and activities clear, well-organized, and effective, with a high satisfaction score of 4.27. The content was considered relevant and well-structured ($M = 4.40$), while the training atmosphere and trainers were praised for creating a relaxed, collaborative learning environment ($M = 4.60$). Instructional media were seen as appropriate and engaging ($M = 4.60$), and the assessment methods aligned well with the program’s goals ($M = 4.60$). Most notably, the program was rated extremely high ($M = 4.80$) for its effectiveness in enhancing teachers’ instructional skills and capacity to empower learners. These findings confirm the program’s strong impact and overall quality in supporting foreign teachers’ professional development in Thailand. Therefore, the evaluation showed very high teacher satisfaction across all areas. Teachers found the learning process clear and relevant, with content that was practical and well-structured. They highlighted the supportive atmosphere and collaborative trainer approach as particularly valuable, while instructional media and assessment methods were seen as well-aligned with program goals. Most importantly, participants reported clear improvements in lesson planning, instructional delivery, classroom management, and learner empowerment. These findings suggest the program was both well-received and effective in strengthening foreign teachers’ instructional practice in diverse contexts.

Table 1

Results of culturally responsive, technology-assisted peer coaching collaborative program quality assessment.

Evaluation Criteria	Appropriateness Level		
	$\bar{x}$	S. D	
1. Principles			
1.1 The program is based on sound theoretical and practical foundations.	4.60	0.55	Highest
1.2 The program aligns with the principles of culturally responsive teaching.	4.60	0.55	Highest
1.3 The principles support inclusive and equitable professional development.	4.80	0.45	Highest
Total	4.67	0.24	Highest
2. Objectives			
2.1 Objectives are clearly stated and measurable.	4.60	0.55	Highest
2.2 Objectives align with the needs of foreign teachers in Thailand.	4.80	0.45	Highest
2.3 The objectives reflect the goal of enhancing learner empowerment.	4.80	0.45	Highest
Total	4.73	0.15	Highest
3. Structured content and learning modules			
3.1 Content is accurate, up-to-date, and relevant.	4.60	0.55	Highest
3.2 The program content is well structured and addresses key areas of instructional skills development.	4.60	0.55	Highest
3.3 Cultural responsiveness is integrated effectively throughout the content.	4.40	0.55	High
Total	4.53	0.45	Highest
4. Learning experiences and activities			
4.1 Activities are engaging, participatory, and contextually appropriate.	4.80	0.45	Highest
4.2 Learning experiences promote collaboration and reflective practice.	4.40	0.55	High
4.3 The peer coaching model is effectively implemented and structured.	4.40	0.55	High
Total	4.53	0.30	Highest
5. Instructional Media			
5.1 Instructional media are appropriate, accessible, and user-friendly.	4.80	0.45	Highest
5.2 Technology is effectively used to support learning and coaching.	4.20	0.45	High
5.3 Media supports diverse learning styles and promotes engagement.	4.60	0.55	Highest
Total	4.53	0.18	Highest
6. Assessment and Evaluation			
6.1 Assessment methods align with the program's objectives and outcomes.	4.60	0.55	Highest
6.2 A variety of assessment tools (self, peer, instructor feedback) are used appropriately.	4.80	0.45	Highest
6.3 Evaluation strategies support the development of instructional skills and learner empowerment.	4.40	0.55	High
Total	4.60	0.37	Highest
Overall total	4.60	0.10	Highest

11.1. Results of studying teachers' perceptions of the culturally responsive, technology-assisted peer coaching collaborative program

The findings from the foreign teachers' reflections highlighted a strong positive response to the culturally responsive, technology-assisted peer coaching collaborative program. Participants described the experience as highly motivating, practical, and transformative, emphasizing its direct relevance to the realities of teaching in Thai classrooms. Many appreciated the culturally sensitive and collaborative nature of the program, with one teacher sharing,

"This program was an eye-opener for me. It made me rethink how I approach teaching in a Thai classroom."

Another teacher noted, *"I felt very supported throughout the process; it wasn't just about theory but actual strategies I could apply immediately."*

Teachers reported clear improvements in their instructional practices, particularly in lesson planning, classroom interaction, and the use of student-centered and culturally responsive teaching strategies. Several remarked on the shift in their approach to learner

empowerment, encouraging more autonomy, critical thinking, and active engagement.

As one participant put it, *"Now I always try to design activities that put students in charge of their learning,"* while another added, *"I learned to frame questions that challenge students to think and express themselves."*

Participants also expressed high satisfaction with the program's content, structure, and assessment methods, particularly praising the integration of technology to support collaboration and feedback. Many found the learning activities closely aligned with their day-to-day classroom challenges.

One teacher noted, *"The learning activities and digital tools used reflected what I needed in my day-to-day teaching,"* and another added,

"Peer assessments and online reflections helped me recognize both my strengths and the areas I needed to grow."

Peer feedback emerged as a particularly valuable component of the program. Teachers appreciated receiving constructive input from their colleagues, which deepened their reflection and inspired experimentation with new techniques.

One participant observed, *"Hearing from my peers helped me see that even small changes in how I engage students could have a big impact,"* while another shared,

"I felt inspired to try new techniques shared by my colleagues during peer coaching." Components such as peer coaching sessions, collaborative lesson planning, and demonstration teaching delivered through both face-to-face and digital formats were frequently identified as especially effective in fostering professional growth within a supportive and culturally attuned environment. Overall, participants agreed that the program had a significant impact on their instructional skills and their ability to empower students. Many noted visible improvements in student engagement, participation, and ownership of learning.

One teacher reflected, *"My students are much more active now; they ask questions, work together, and take responsibility for their learning."*

While feedback was overwhelmingly positive, teachers also offered constructive suggestions for improvement. These included extending the program's duration, increasing classroom-based peer observation opportunities, and providing ongoing follow-up support. As one teacher suggested,

"If we had more time, especially for the peer feedback cycles, we could go even deeper into improving our practice."

12. Discussion of research findings

This study aimed to explore the needs and challenges faced by foreign teachers in Thailand and to develop, implement, and evaluate a culturally responsive, technology-assisted peer coaching collaborative program to enhance their instructional skills for learner empowerment. Based on the research findings, the discussion of the research findings is organized according to the four main objectives of the study as follows.

13. Results of studying the needs, challenges, and contextual factors influencing foreign teachers' instructional practices for learner empowerment in Thailand

The study revealed that foreign teachers in Thailand face a wide range of interconnected challenges that affect their instructional practices and their ability to empower learners. Pedagogically, many struggled to adapt lesson content to the Thai curriculum, manage classrooms with diverse student needs, and integrate technology in ways that genuinely support learning. At the same time, designing lessons that centered students as active participants proved difficult. Survey data reinforced these findings, showing a strong demand for professional development in areas such as lesson planning, assessment strategies, classroom management, cultural responsiveness, and digital integration. Professional isolation emerged as a particularly important theme. Many

Table 2

The results of teachers' instructional skills for learner empowerment following participation in the culturally responsive, technology-assisted peer coaching program.

Component	Full Score	n	Test	Mean Score	SD	Mean (%)	t	df	P-Value	Effect Size
Concept Understanding	30	68	Pretest	14.103	1.067	47.01	72.872	67	<0.001	8.837
			Posttest	24.882	1.344	82.94				
Lesson Planning	20	68	Pretest	8.971	1.007	44.86	41.913	67	<0.001	5.083
			Posttest	16.382	0.881	81.91				
Instructional Delivery Methods	30	68	Pretest	11.794	1.241	39.31	50.528	67	<0.001	6.127
			Posttest	24.250	1.408	80.83				
Authentic Assessment Strategies	10	68	Pretest	4.059	0.770	40.59	38.156	67	<0.001	4.627
			Posttest	8.176	0.421	81.76				
Classroom Management	10	68	Pretest	3.897	0.672	38.97	45.956	67	<0.001	5.573
			Posttest	8.162	0.371	81.62				
Overall Score	100	68	Pretest	42.750	2.255	42.75	122.758	67	<0.001	14.887
			Posttest	82.853	1.363	81.85				

Table 3

Teachers' satisfaction with the culturally responsive, technology-assisted peer coaching collaborative program.

Evaluated Items		Satisfaction Level		
		$\bar{x}$	S.D	
A. Learning process and learning activities				
1	The learning experiences and activities were clear, interesting, and easy to follow.	4.40	0.55	High
2	The learning experiences and activities were systematically organized	4.60	0.55	Highest
3	Learning experiences and activities were interesting and effective in enhancing teachers' instructional skills and learner empowerment capacity	3.80	0.45	High
	Total	4.27	0.28	High
B. Content				
4	The learning content was appropriate and focused on enhancing teachers' instructional skills and learner empowerment capacity.	4.60	0.55	Highest
5	The learning content was systematically organized and focused on the step-by-step enhancement of teachers' instructional skills for learner empowerment capacity	4.20	0.45	High
	Total	4.40	0.22	High
C. Training atmosphere and trainers				
6	The instructional atmosphere was relaxed and favored the enhancement of our instructional skills and learner empowerment capacity	4.80	0.45	Highest
7	The trainer organized activities to encourage idea-sharing in a friendly and collaborative learning environment.	4.40	0.55	High
	Total	4.60	0.22	Highest
D. Instructional media				
8	The instructional media were varied, appropriate and consistent with the content and in line with the enhancement of teachers' instructional skills and learner empowerment capacity	4.80	0.45	Highest
9	All instructional media were geared toward enhancing teachers' instructional skills and learner empowerment capacity	4.40	0.55	High
	Total	4.60	0.42	Highest
E. Assessment				
10	The model of assessment was appropriate, consistent with the content and in line with the program objective.	4.60	0.55	Highest
F. Enhancement of teachers' instructional skills and learner empowerment capacity				
11	The training program has fully enhanced my lesson planning knowledge, instructional delivery methods, classroom management and assessment of learning outcomes	4.80	0.45	Highest
12	This program led to the enhancement of my instructional skills and learner empowerment capacity.	4.80	0.45	Highest
	Total	4.80	0.27	Highest
	Overall Total	4.52	0.11	Highest

teachers lacked structured mentorship, collaborative networks, or peer support, limiting opportunities for reflection and shared learning. This isolation undermined confidence and restricted the adoption of innovative or culturally responsive practices. Nonetheless, teachers expressed interest in collaborative approaches, especially peer coaching indicated a potential solution: structured collaboration could offer opportunities for skill development, cultural adaptation, and enhanced learner empowerment.

These challenges also reflected systemic factors. A substantial number of foreign teachers entered the profession through alternative routes, including short-term certifications, volunteer programs, or language teaching schemes, rather than formal teacher education. Consequently, foundational skills in pedagogy, classroom management, and student-centered design were often limited, which complicated adaptation to Thai classrooms. Institutional support was also minimal, with few schools providing induction, mentorship, or ongoing professional development, leaving teachers to navigate cultural and instructional demands largely independently. These findings align with previous research. Srisitanont (2023) reported that foreign teachers often encounter obstacles related to language, administrative policies, and cultural adaptation, highlighting the need for targeted professional development in instructional design, classroom management, and subject-specific knowledge. Similarly, Bishop et al. (2016) emphasized that effective foreign teachers require a broad set of competencies, including curriculum planning, instructional delivery, and student support. When considered together, the qualitative and quantitative data provide a holistic understanding of these challenges. Themes of isolation, cultural adaptation, and technology integration in interviews corresponded closely with survey results showing high needs for professional training in these areas. This convergence indicates that professional development programs should adopt collaborative, culturally sensitive, and technology-supported models that address both skills and contextual challenges. Practically, these findings suggest that professional development should focus on peer coaching and collaborative networks to reduce isolation and foster reflective growth. Programs must also consider teachers' varied backgrounds and emphasize practical strategies in classroom management, cultural adaptation, and technology use. At a policy level, schools and education authorities should strengthen institutional structures, including mentorship and induction systems, to support foreign teachers in navigating Thai educational contexts. Addressing both individual skill gaps and systemic barriers can promote effective teaching and learner empowerment in culturally diverse classrooms.

14. Results of development and quality assessment of the culturally responsive, technology-assisted peer coaching collaborative program

The development and quality assessment of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learners'

empowerment in Thailand revealed that the program, grounded in culturally responsive teaching, peer coaching and collaborative learning, learner empowerment and constructivist pedagogy, and technology-assisted instruction and coaching, comprises six components: (1) principles, (2) objectives, (3) content and structure, (4) learning experiences and activities, (5) instructional media, and (6) assessment and evaluation of learning outcomes. The program's learning process is organized into six stages: (1) concept explanation, cultural awareness, and reflective practices, (2) constructivist teaching strategy workshops, (3) culturally and technologically integrated instructional design, (4) peer coaching cycles with observation and feedback, (5) empowerment-focused teaching strategies, and (6) showcase, reflection, and sustainability planning. Expert evaluation and a feasibility study through focus group discussions indicated that the overall appropriateness of the program was rated at the highest level ($\bar{x} = 4.60$, $SD = 0.10$), suggesting both high quality and strong potential for practical implementation. Beyond confirming feasibility, these ratings highlight particular strengths of the program. Experts noted that the integration of cultural awareness with technology-supported peer coaching was especially valuable, as it directly addresses the challenges foreign teachers face in adapting to the Thai classroom context. The clear structure of staged learning experiences and the emphasis on reflective practice were also viewed as enhancing the program's relevance to professional growth. At the same time, the evaluation results suggest areas requiring further consideration. While the high average rating indicates overall approval, the narrow standard deviation may mask subtle differences in perceptions. For instance, some experts raised concerns about the sustainability of technology-assisted components in resource-limited schools and the potential need for additional scaffolding to ensure consistent application of culturally responsive strategies across diverse contexts. The iterative development process contributed significantly to the program's positive evaluation. Beginning with a needs assessment of foreign teachers' challenges in Thailand, the program was designed using theories of culturally responsive teaching, constructivist pedagogy, and technology-enhanced learning as guiding frameworks. Feedback from five educational experts led to meaningful revisions in program content and structure, and focus group consultations with specialists in teacher development generated further practical suggestions. This reflective, evidence-informed cycle of design, review, and modification ensured that the program aligned well with both professional standards and local contextual demands.

These findings resonate with Wangphasit and Promnont (2022), who reported similarly high ratings (Mean = 4.43, $SD = 0.19$) for a teacher training course designed to enhance coaching skills for creative English communication. Their study showed that programs integrating clear objectives, structured processes, and systematic evaluation are perceived as highly effective. The present study's results also extend the insights of Arunmek, Khajornsilp, and Sukdee (2024), who developed a professional competence program for physical education teachers. While their training was rated at a satisfactory level (Mean = 3.50), the contrast suggests that embedding cultural responsiveness and technology-supported collaboration may contribute to higher perceived quality and feasibility. Taken together, the evaluation outcomes not only affirm the appropriateness of the developed program but also shed light on its potential for meaningful impact. The high ratings reflect recognition of its cultural responsiveness, structured peer support, and technology integration, while the identified challenges underscore the importance of planning for sustainability and adaptability in diverse school contexts. These insights connect the evaluation results directly to the program's overarching goal: enhancing foreign teachers' instructional skills in ways that are both empowering for learners and responsive to the realities of Thai educational settings.

15. Results of implementation and study of the effectiveness of the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learners' empowerment in Thailand

The findings of this study clearly demonstrate that the culturally responsive, technology-assisted peer coaching collaborative program brought about substantial and consistent improvements in foreign teachers' instructional skills for learner empowerment, with overall performance rising from a moderate pretest level to a high posttest level and all components concept understanding, lesson planning, instructional delivery, authentic assessment, and classroom management showing statistically significant and meaningful gains. These positive outcomes can be explained by several interconnected factors: the program's culturally responsive framework encouraged teachers to design lessons that were more relevant to students' backgrounds, thereby deepening engagement and understanding; the peer coaching model created a supportive environment for collaboration, reflection, and constructive feedback, enabling teachers to adapt their practices more effectively; and the integration of technology offered practical tools that enhanced lesson planning, teaching methods, and assessment strategies, making learner-centered instruction both accessible and sustainable. At the same time, the slightly lower scores in authentic assessment suggest that this area may have been more challenging, perhaps because performance-based and formative evaluation methods require more time, practice, and familiarity than the program was able to provide within its timeframe. This points to the need for additional support in future iterations, such as extended workshops, exemplar assessment models, or classroom-based demonstrations, to strengthen teachers' ability to design and implement authentic assessment effectively. Taken together, these findings not only highlight the program's effectiveness in enhancing teachers' confidence, competence, and consistency but also resonate with earlier research emphasizing the power of collaborative professional development in improving instructional quality and learner outcomes (Kennedy, 2016; Levine & Marcus, 2010; Lofthouse, Leat, & Towler, 2010; Vescio, Ross, & Adams, 2008), while adding new evidence that combining cultural responsiveness, technology, and peer coaching creates a powerful and sustainable pathway for empowering learners.

Although teachers' instructional skills improved markedly in all areas, the relatively lower gains in authentic assessment strategies suggest a continuing challenge. Performance-based and formative assessments require not only technical knowledge but also time, practice, and contextual adaptation, which may have been difficult to achieve within the program's short duration. Many foreign teachers, as reported in needs assessments, entered Thai classrooms with limited prior training in culturally relevant assessment methods, making this area more complex to master compared to lesson planning or instructional delivery. This finding underscores the need for additional support, such as extended workshops, classroom-based demonstrations, and exemplars of culturally appropriate assessment tools, to help teachers better integrate authentic assessment practices into their daily teaching. By addressing this gap, future iterations of the program could strengthen teachers' capacity to evaluate student learning in ways that are both meaningful and empowering.

16. The results of evaluating the culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learners' empowerment in Thailand

The program evaluation results indicate that foreign teachers were highly satisfied with the culturally responsive, technology-assisted peer coaching collaborative program, giving it an overall rating of 4.52, with the highest score of 4.80 for its impact on improving instructional skills for learner empowerment. Teachers particularly valued the program's

clear structure, relevant content, supportive training atmosphere, and effective use of instructional media and assessment. Importantly, interviews revealed that participants experienced tangible improvements in concept understanding, instructional delivery strategies, lesson planning, classroom interaction, and student-centered approaches, with peer coaching and technology integration highlighted as especially beneficial. These positive perceptions can be attributed to the program's well-designed, step-by-step learning process, which combined theoretical explanation with practical application through peer coaching, goal setting, collaborative inquiry, reflection, and feedback. The use of group activities, micro-teaching, and expert feedback further reinforced teachers' confidence and competence in applying new strategies in the classroom. At the same time, suggestions for extending the program duration and increasing opportunities for peer observation indicate areas for refinement, suggesting that while the program effectively built knowledge and skills, additional time and exposure could further consolidate learning and support sustained implementation. These findings are in line with previous research emphasizing the effectiveness of peer coaching, technology integration, and culturally responsive professional development. For example, [Hsieh et al. \(2021\)](#) found that peer coaching significantly improved teachers' instructional practices and students' learning outcomes by promoting reflection and confidence in new teaching strategies. Similarly, [Pesina \(2025\)](#) highlighted that technology-assisted mentoring platforms enhance teacher satisfaction and professional growth by providing structured guidance, progress monitoring, and accessible resources. Furthermore, [Kuwari \(2024\)](#) reported that culturally responsive coaching strengthened teachers' capacity to foster student engagement, relevance, and belonging, particularly in diverse classrooms. Taken together, these studies support the present findings by showing that combining peer coaching, technology, and culturally responsive approaches can produce meaningful improvements in teachers' instructional skills and professional confidence. Overall, the program successfully integrated principles of adult learning collaboration, relevance, and reflection resulting in high teacher satisfaction, enhanced instructional capacity, and a clear pathway for empowering learners, while also pointing to areas for future refinement to maximize its impact.

17. Practical implications for policymakers and schools

The findings of this study have direct implications for both policymakers and schools. The significant gains in teachers' instructional skills highlight the effectiveness of culturally responsive, technology-assisted peer coaching as a professional development model. Policymakers should consider integrating such programs into national strategies for foreign teacher development, moving beyond short-term workshops to sustained, context-specific training. At the school level, embedding peer coaching cycles, reflective practice, and technology-supported collaboration can reduce professional isolation and strengthen teachers' instructional capacity. Teachers' feedback also suggests that extending program duration and providing more peer observation opportunities would further enhance sustainability. Together, these measures can ensure that foreign teachers are better equipped to empower learners in Thailand's diverse classrooms.

18. Conclusion

This study aimed to develop a culturally responsive, technology-assisted peer coaching collaborative program to enhance foreign teachers' instructional skills for learner empowerment in Thailand. The findings showed that foreign teachers face multifaceted challenges, including limited pedagogical training, cultural and linguistic barriers, and insufficient institutional support which extend beyond technical skill gaps and reflect deeper structural issues in teacher preparation and support systems. The developed program, grounded in constructivist pedagogy, peer coaching, learner empowerment, and technology

integration, addressed these needs effectively. Teachers' instructional skills improved substantially across all domains, rising from 42.75 % at the pretest stage ($M = 42.750$, $SD = 2.255$) to 81.85 % at the posttest stage ($M = 82.853$, $SD = 1.363$), and participants reported high satisfaction ($M = 4.52$) with the program's relevance, collaborative design, and practical utility. Beyond numerical gains, these findings highlight the importance of creating sustained, culturally responsive professional learning opportunities that foster reflection, collaboration, and empowerment for teachers working in diverse contexts. However, the study also revealed areas for improvement: expanding the program's duration, integrating more opportunities for peer observation, and providing ongoing support in authentic assessment practices could enhance long-term effectiveness. Acknowledging these limitations underscores the need for iterative refinement and broader institutional commitment. Overall, this research contributes not only a validated professional development model but also a deeper understanding of how culturally responsive, technology-supported peer coaching can bridge the gap between foreign teachers' challenges and the structural supports required for learner-centered education. The study offers practical implications for policymakers, school administrators, and teacher educators seeking to design sustainable, contextually relevant professional development initiatives in multicultural educational systems.

CRedit authorship contribution statement

Henry Yuh Anchunda: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Pakorn Prachanban:** Writing – review & editing, Writing – original draft, Validation, Resources, Investigation, Data curation, Conceptualization. **Taweesak Sawangmek:** Writing – original draft, Supervision, Methodology, Formal analysis, Conceptualization. **Suparada Anchunda:** Writing – original draft, Visualization, Validation, Methodology, Conceptualization.

Recommendations

Recommendations for implementation

To ensure the successful implementation of the culturally responsive, technology-assisted peer coaching collaborative program developed in this study, it is important that all stakeholders including school leaders, foreign teachers, and mentors, fully understand the program's goals, structure, and procedures. The program handbook should be carefully reviewed and used as a practical guide to maintain consistency and fidelity throughout the implementation process. The program should be embedded within a structured professional learning framework that promotes continuous support, reflective teaching, and culturally responsive pedagogy. Key strategies include regular peer coaching cycles, collaborative lesson planning, classroom observations, and constructive feedback sessions facilitated by trained mentors. These activities should reflect the realities of the Thai classroom context and foster intercultural understanding to support meaningful teaching and learning. In addition, schools must provide strong institutional support, including policies that recognize coaching time, allocate resources, and integrate the program into the broader professional development system. This support is essential for sustaining the program and ensuring a lasting impact on both teachers' instructional practices and learners' empowerment.

Recommendations for future studies

Although the program demonstrated significant success in improving foreign teachers' instructional skills for learner empower, the limited sample size of 68 participants may affect the generalizability of the findings. To build on this research, future studies should examine the

implementation and outcomes of the program across various educational levels and settings from primary to higher education and in different cultural and institutional contexts. Exploring how school size, student diversity, and local education policies influence the program's effectiveness will provide deeper insights into its adaptability. Additionally, future research should investigate the direct impact of the program on student outcomes, such as critical thinking, engagement, and learner empowerment, to further strengthen the connection between teacher development and student achievement. Expanding the scope of inquiry will not only validate the program's broader relevance but also inform efforts to scale and tailor similar models to other educational settings.

Limitations and future research

While this study makes a valuable contribution to the development of a culturally responsive, technology-assisted peer coaching collaborative program for foreign teachers in Thailand, several limitations should be acknowledged. To begin with, the program's validity and appropriateness were evaluated by only five experts. Although their input was insightful, the limited number of reviewers may not fully reflect the breadth of perspectives required. Future research could therefore benefit from incorporating a wider range of experts, including policymakers and practitioners, to strengthen the program's evaluation.

In addition, the program was implemented with 68 foreign teachers drawn from selected Thai schools. This sample provided meaningful evidence of the program's potential; however, it may not capture the full diversity of teaching contexts and experiences across the country. As such, caution is needed when generalizing the findings. Subsequent studies should consider involving larger and more varied groups of participants to enhance the external validity of results.

Moreover, the training itself was delivered in a relatively short duration of 24 h across two phases. Although this format allowed for a concentrated learning experience, it may not have been sufficient for participants to fully consolidate and sustain their instructional skills and collaborative practices. Extending the training over a longer period, embedding follow-up sessions, and integrating ongoing support systems such as mentoring or online communities of practice would likely improve long-term impact. Looking ahead, future research should expand the validation process, diversify participant samples, and employ longitudinal designs to capture the sustainability of outcomes over time. Furthermore, comparative studies across different cultural and institutional contexts could deepen understanding of how culturally responsive, technology-assisted peer coaching can best empower both teachers and learners.

Availability of data and material

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Ethical statement

Naresuan University Research Board approved this study (P2-0246/2568). All Ethical issues were considered in conducting this study, with informed consent obtained from all subjects before their participation.

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Declaration of competing interest

The authors have no competing interests to declare that are relevant to the content of this article. There is no potential conflict of interest between the authors in this study.

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