

Challenges Encountered by Pre-service English Language Teachers in Conducting Classroom Action Research in Thailand

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ABSTRACT

Conducting research presents challenges for all researchers, but it is particularly challenging for pre-service teachers (PSTs) to engage in the research process for the first time. This paper explores pre-service English language teachers' challenges in conducting classroom action research (CAR) and how they overcome them. This qualitative study employed a purposive sampling technique and involved twenty-three English PSTs in Thailand. They participated in a focus group interview. Data from the interview was analyzed using a content analysis. It was discovered that PSTs encountered challenges that can be classified into three main categories: research-related, writing, and personal issues. To solve the problems, they conducted literature reviews and relied heavily on their research advisors. The findings revealed insufficient preparation for conducting CAR, raising concerns about professional development and the ability to carry out CAR in the future. The implications offer insights for professional communities.

Keywords: Classroom Action Research, Pre-service teachers, Teaching Practicum

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Introduction

Teacher quality plays a crucial role in students' progress in language learning (Noom-ura, 2013). While pedagogical knowledge, classroom management skills, and strong communication abilities remain essential for teacher competence (Shahmohammadi, 2015), the responsibilities of teachers today extend beyond providing instruction. Apart from their teaching practice, teachers are now also expected to conduct CAR to systematically enhance their teaching effectiveness and address various learning challenges (Lateh et al., 2021). The process of CAR involves developing and implementing solutions or strategies, known as innovations, that aim to improve student learning and resolve issues within the classroom.

In Thailand, CAR is recognized and promoted, especially in response to educational reforms focusing on quality and accountability. Similarly, across ASEAN countries, such as the Philippines, Indonesia, and Myanmar, CAR is considered crucial for improving teaching and student outcomes. Nevertheless, teachers, particularly those new to research, face substantial obstacles. As Ifeoma (2019) points out, research can be complicated for a first-time researcher. In Thailand, Phanoomupparkan (2020), through a needs assessment, reported that the most urgent areas of support included research design, literature review, and report writing. Teachers in the Philippines face challenges with data analysis, heavy workloads, and lack of financial resources (Oestar & Marzo, 2022), while writing anxiety and difficulties in literature reviews are reported (Tindowen et al., 2019). In Indonesia, teachers often lack research methodology knowledge (Bendtsen et al., 2021; Irfan et al., 2023), and in Myanmar, teachers struggle with insufficient knowledge, time, resources, and institutional support (Thu & Than, 2021).

Across ASEAN, common CAR challenges include writing difficulties, time constraints, limited research knowledge, and weak institutional support. However, Thailand presents unique concerns: PSTs often misunderstand CAR's fundamental nature and may have negative attitudes toward its practice (Faikhamta & Clarke, 2015), and many struggle to select appropriate innovations for their projects (Ketsing, 2017).

Given the need to equip PSTs with skills for effective CAR, an in-depth exploration of their experiences, particularly in English language teaching (ELT) in Thailand, is essential, as this group remains under-researched. While CAR is emphasized in teacher education, the complexities faced by PSTs are not well understood. Qualitative research amplifying their voices is needed to provide meaningful insights. This study addresses this gap by investigating the challenges pre-service English language teachers in Thailand encounter in CAR, and the strategies they use to overcome them. The findings will enhance understanding, inform educational practice, and guide future research.

Literature Review

Classroom Action Research (CAR) is a reflective approach where teachers examine their practices to improve student learning (Burns, 2009; Mettetal, 2002). It involves questioning, observing, analyzing, and adapting strategies to enhance classroom dynamics (Alwi & Helsa, 2019). CAR follows a cyclical process: Plan, Act, Observe, and Reflect (Burns, 2009), promoting continuous improvement through reflection. (Ryan, 2017; Semathong, 2023).

As noted in the introduction, PSTs in the ASEAN community commonly face challenges in key aspects of the CAR process. These include

limited understanding of research design and methodology, difficulties in conducting literature reviews, and confusion in data collection and interpretation (Bendtsen et al., 2021; Phanoomupparkan, 2020). Research writing also presents a major obstacle, particularly in organizing reports, presenting findings, and articulating arguments clearly (Oestar & Marzo, 2022; Tindowen et al., 2019).

A key institutional factor is the structure of teacher education curricula, which allocate minimal attention to research preparation. PSTs often misunderstand the nature of CAR and hold negative attitudes toward its implementation (Faikhamta & Clarke, 2015). Similar issues exist across ASEAN, where research training in teacher education is typically limited to a single course, as seen in programs in the Philippines, northern Thailand, and Malaysia (anonymous sources withheld to avoid institutional implications). These challenges highlight a region-wide need to strengthen research preparation within teacher education. Despite growing emphasis on research, there is limited research on the experiences of pre-service English language teachers in Thailand, with most CAR studies focusing on non-ELT fields. This gap indicates a need to investigate how pre-service English teachers face and address CAR-related challenges.

Conceptual Framework

This study is structured around three interconnected constructs shaping the investigation of PSTs' experiences with CAR. First, CAR is viewed as a reflective, practice-based process for systematically improving teaching. Second, the study draws on prior research, mainly quantitative, that highlights challenges such as limited methodological knowledge, time

constraints, and writing difficulties among PSTs. Third, the framework emphasizes exploring these challenges from the actual perspectives and lived experiences of PSTs. Together, these constructs inform the study's qualitative design, guide data collection and analysis, and support the interpretation of findings. Rather than imposing a top-down theoretical lens, it allows the research to remain grounded in participants' narratives and reflections. This approach promotes a deeper understanding of how institutional and individual factors shape their engagement with CAR and ensures that the findings reflect authentic and contextually situated experiences.

Research Questions

1. What challenges do pre-service teachers encounter in conducting classroom action research?
2. How do they overcome those challenges?

Participants

The participants were twenty-three pre-service teachers, aged 21–23, from a public Thai university, selected via purposive sampling. The criteria for inclusion were that they had completed all major coursework, recently finished an EFL teaching practicum, and had taken only one or two research courses with no prior CAR experience. The main goal of purposive sampling is to focus on particular characteristics of a population, which will best enable researchers to explore an insightful understanding (Palinkas et al., 2015). Yet, it might offer limitations in generalizing the findings. The readers themselves make a personal judgment to apply this study to their context.

Methodology

This research relies on qualitative data processes. Research instruments, procedures, ethical considerations, reflexivity, and data analysis are presented below.

Research Instrument

Focus group interview on the challenges in conducting classroom action research

This focus group interview was a semi-structured interview conducted with a group of PSTs to collect data about challenges in conducting CAR and what strategies they employ to overcome those challenges. In addition to general interview questions about the challenges and solutions related to conducting CAR, the interviews included additional questions drawn from strengths, weaknesses, and concerns identified in the research reports. The interview was conducted in Thai to prevent language barriers. The interviewer was the researcher and instructor of the program.

Procedures

The participants were pre-service English language teachers who had conducted CAR in schools for four months, with the duration of each CAR cycle determined by the researchers. Alongside general questions about challenges and solutions in conducting CAR, the interviews aimed to explore participants' experiences in depth. At the end of the practicum, participants submitted their CAR reports, which the researchers reviewed to develop additional interview questions focused on the research process, challenges, and decision-making at each stage. PSTs were then informed of the upcoming interview and given seven days to decide whether

to participate, with those interested invited to attend the session.

On the scheduled day, twenty-three PSTs participated in the interview session. The researcher began by outlining the details of the study, then proceeded with general research questions, followed by specific questions derived from participants' reports. Follow-up questions were used to encourage deeper discussion. For questions related to challenges or limitations, such as difficulties with statistics, the researcher addressed the entire group and invited only those willing to share to respond. If no one responded, the question was skipped. The interview, which lasted two hours and five minutes, was recorded, transcribed, and analyzed using content analysis.

Ethical Considerations

Informed consent was obtained from participants, who received a research information sheet via Line detailing the study's rationale, objectives, and risks. They had 7 days to decide whether to participate and were informed that participation was voluntary, with the option to withdraw at any time without affecting their relationships or grades. Voluntary participants were informed that confidentiality was maintained by ensuring that no personal identifiers were shared and by securely storing participants' data to protect their privacy. Efforts to minimize harm included providing a comfortable interview environment where participants could eat, drink, or use the restroom as needed without asking permission.

Reflexivity of the Researchers

CAR is a complex process, and first-time researchers often find it particularly challenging. As researchers guiding PSTs through CAR, we have observed their frequent anxiety and

lack of confidence in conducting research. While we strive to encourage independence, there are times when providing direct answers may inadvertently hinder their development as autonomous researchers. This raises concerns about their future capacity to address classroom problems and improve teaching. Additionally, our dual roles as lecturers, research advisors, and practicum supervisors fostered a close, “family-like” relationship with participants. This intimacy may have influenced our interpretations and the participants’ responses, but it also encouraged openness. Participants felt comfortable sharing their limitations and challenges, often with humor and trust, which enriched the study with honest and meaningful insights.

Data Analysis

The data were treated as qualitative raw data and analyzed using content analysis to identify, organize, and interpret patterns in the transcripts. The researchers coded key ideas and

grouped related codes into themes. To enhance trustworthiness and address potential bias, peer debriefing and member checking were employed. Colleagues reviewed the coding for consistency, and some participants verified the summarized data to ensure its accuracy.

Results

Twenty-three PSTs revealed information regarding challenges in conducting CAR that could be categorized into three main categories: *Research-related issues*, *writing issues*, and *personal issues*, as indicated in Table 1.

For the first main category, *research-related issues*, it was found that PSTs expressed their concerns on the following challenges: identifying problems, developing innovations, developing instruments, and dealing with research procedures.

Table 1

Challenges in conducting CAR encountered by PSTs and how they overcome those challenges

Challenges		Solutions	
1. Research-related issues	1.1. Identifying problems	- Reviewing literature	
	1.2. Developing innovations	- Consulting advisors	
	1.3. Developing instruments	1.3.1. Creating instruments*	- Discussing with peers*
		1.3.2. Validating instruments*	
	1.4. Dealing with research procedures	1.4.1. Implementing innovations**	- Consulting a graduate*
1.4.2. Dealing with participants		- Consulting school supervisors**	
2. Writing issues	2.1. Stating problems	2.1.1. Addressing the problem	
		2.1.2. Finding research gap	
	2.2. Defining key terms		
	2.3. Organizing a literature review	2.3.1. Reviewing relevant literature*	- Consulting advisors
		2.3.2. Summarizing previous studies*	
2.4. Reporting results			
2.5. Writing a discussion section		- Sharing among peers*	

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3. Personal issues	3.1. Dealing with excessive school tasks*	- Making rigid schedules*
	3.2. Lack of motivation**	- Consulting school supervisors* - Talking to peers** - Developing strategies to encourage themselves**

*, ** *It is specific to a particular challenge.*

PSTs found (1.1) *identifying problems* difficult because they had to deal with too many problems. They could not identify the problems that were suitable for their CAR. To address this issue, they conducted a literature review and presented a list of problems to the university supervisors, aiding them in selecting a potential problem for their CAR.

“It was difficult to identify a focus for my research. After reviewing literature on common teaching challenges, I listed potential issues and sought feedback from Fah [pseudonym of advisor].”

Next, (1.2) *Developing innovations* is another challenging part for PSTs. Most PSTs conducted a literature review, and some of them consulted research advisors since they were uncertain whether the chosen ideas could be implemented as an innovation.

“I encountered difficulties in developing innovation because I lacked knowledge about ELT approaches. I learned about it in the course, but it was just superficial. I did not know what was possible to be a classroom innovation.”

“I came up with my classroom innovation—a reading activity—and spent a lot of time developing it. When I shared it with Luffy [pseudonym of advisor], he helped me refine it to be more systematic and practical.”

Another challenge is (1.3) *developing research instruments*. (1.3.1) *Creating Instruments* and (1.3.2) *validating instruments* were difficult to handle since they lacked knowledge and experience in authentic settings. To solve this problem, they conducted a literature review, consulted advisors, discussed with peers, and consulted graduates.

“I think a significant challenge I encountered was the development of the research instruments. I was not sure about creating the instruments and how to validate them. I think I lacked the necessary knowledge and experience.”

“I conducted extensive literature reviews to understand the instrument development. I think it was the best way to develop instruments.”

“For me, it was easy... I just consulted my advisor. Luffy [pseudonym of advisor] told me how to do it and gave me some examples.”

“I talked to Bear [pseudonym of a graduate]. I knew that he conducted research on a similar topic. I also shared some ideas with Nam [pseudonym of a peer]. We discussed the instruments together.”

A major challenge in research is (1.4) *dealing with procedures*, especially (1.4.1) *implementing innovation* and (1.4.2) *addressing participant issues*. PSTs struggled to run activities as planned, with some participants missing key parts (experimental mortality). To solve these challenges, they reviewed literature, consulted research advisors, and received guidance from school supervisors during implementation.

“The challenging part for me was the use of innovation in the class as indicated in the lesson plan. When students did not understand how to do the activity, I struggled to fix unexpected problems. Sometimes, the Internet and computers went wrong. It was hard to deal with those problems.”

“I had problems with students. My students always missed the class..... like..... there were 20 students, but 7 students were absent. For the pre-test and post-test, some students did not show up that day as well.”

“I was not sure how to implement the innovation, so I read some research articles to make sure that I was on the right track. I also consulted my school supervisor for guidance. She was generous. She helped me a lot.”

“I asked my advisor about the problem (experimental mortality). Luffy

suggested I cut some participants out of the study.”

For the second main category, *writing issues*, PSTs revealed challenges in completing a research paper, which can be categorized into five different matters: stating problems and introduction, defining key terms, organizing a literature review, reporting results, and writing a discussion section.

PSTs found (2.1) *stating problems difficult*, including (2.1.1) *addressing the problems* and (2.1.2) *finding the research gap*. Therefore, they pointed out that they spent a large amount of effort and time conducting literature reviews and consulting advisors.

“The problem for me was about writing a paper. It was hard for me to organize the ideas to make them convincing. It took a lot of time to find relevant articles and synthesize them to indicate the research gap.”

“I also spent a lot of time doing this part. However, I was not sure about that. I submitted it to June [pseudonym of advisor] and asked her to examine it.”

Moreover, it was challenging for PSTs to deal with (2.2) *defining key terms*. As is well known, key terms should be critical, relevant, concise, and operational. It was still harder to express them in a well-written academic format. To deal with this challenge, they provided several versions of them and consulted advisors.

“I had a problem with defining key terms. I tried my best to review the literature and define the key terms for

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me. For my research, I had to define the terms ‘Phonics’ and ‘pronunciation ability.’ I revised it many times.”

“I totally agree with her. It was hard for me since I did not know how to make it operational. I provided several versions of the definition and introduced them to Fah [advisor] to help me choose the best one.”

Next, (2.3) *Organizing a literature review* was one of the most difficult and time-consuming tasks for PSTs, as they struggled to (2.3.1) *find relevant resources* and (2.3.2) *synthesize previous studies* into cohesive paragraphs. To overcome this challenge, they sought advice from advisors for relevant resources and shared articles and research studies among peers who were familiar with each other’s topics.

“The most challenging part for me was organizing the literature review and finding relevant articles. Writing in Thai was even harder, as I had to translate technical terms like ‘cognitive process’ and ‘phonemic awareness’ from English.”

“I asked Luffy [pseudonym of advisor] to help me examine the topics and organization of the literature review. I also asked him how to find some papers on the topics that were still incomplete.”

“We shared some articles together. We knew each other’s research topics. I knew that James [pseudonym of peer] conducted research on vocabulary knowledge, so I shared some articles with him since we conducted research on the same variable.”

PSTs struggled to (2.4) *report results* due to limited understanding, facing challenges in designing tables, presenting statistical data, and differentiating between descriptive and referential statistics. While they consulted literature, this sometimes led to misapplying referential statistics, which are unsuitable for CAR. Advisors were crucial in guiding them to accurately report both quantitative and qualitative results.

“Another challenge I faced was reporting research findings, both quantitative and qualitative, including statistics. I didn’t know how to present data in a table. When I looked at previous studies, I came across statistical tables I didn’t understand. I wasn’t sure how to design my own table or what to include in the findings section.”

“I think I could rely on previous studies. However, when submitting papers, Luffy [pseudonym of advisor] told me that I misused statistics. I added T-test.... I used the websites to calculate it for me, but it was wrong.”

Another challenging part was (2.5) *writing a discussion*. PSTs were required to show their critical analysis to justify the findings with educational principles. Moreover, theoretical justification demands a great deal of understanding of principles. To deal with this challenge, they conducted a literature review and consulted advisors.

“For me, I did not have enough understanding of learning theories. So, I was not sure whether what I wrote would be correct or not. Also, finding related research to back up the

findings was hard since my research was specific to young students.”

“I conducted a literature review. I looked at how the others wrote it, and I tried to follow the way they wrote.”

“I asked Fah [pseudonym of advisor] to help me examine it. Yeah! It was the greatest idea!”

The last main category was *Personal issues*. They can be categorized into two different groups: dealing with excessive school tasks and a lack of motivation. The clarification is provided below.

PSTs faced (3.1) *dealing with excessive school tasks*, including nursing, paperwork, and library administration, with conducting CAR. To manage this, they created a strict schedule to systematically complete tasks and consulted school supervisors to postpone certain duties.

“I did not have time to do the research. There were many school tasks that I had to deal with. Sometimes, I had to do paperwork for my school supervisor. I could not focus on the research.”

“I developed a timeline to complete all the work. I prioritized the easiest one that I could complete first, and the research may have been the last one since it was not easy to do.”

“For me, I asked my school supervisors to allow me to postpone some tasks that I could not complete within the due date.”

The last challenge was (3.2) *lack of motivation*. Despite their hard work, they lack motivation to complete tasks, including CAR. To boost their motivation, they shared their difficulties with their peers and developed strategies to encourage themselves when conducting CAR in difficult situations.

“Can I talk about motivation? I lacked the motivation to conduct research. I was exhausted from doing school tasks. I didn’t want to do anything else. I was sick of everything.”

“I stuck pictures of V [a member of the Korean boy band BTS] on my desk. I always felt more energized when I saw him.”

“I think I talked to Deer often [pseudonym of peer]. I shared my difficulties with her, and we encouraged each other. We always shared positive words like ‘We can do it, we can do it, we can do it’ [meme from TikTok] and ‘Energy! Energy! Boost! Boost!’ [meme from TikTok]. It worked!”

Discussion

Conducting CAR is especially challenging for PSTs, particularly those with no prior experience. While foundational research skills are taught in coursework, applying these skills in real classroom settings requires the integration of pedagogical and research knowledge as well as hands-on experience. The main challenges identified in this study fall into three categories: *research-related*, *writing*, and *personal issues*.

Research-related issues include problem identification, innovation development, instrument creation, and managing research procedures. Innovation, a core component of CAR, demands creativity, contextual understanding, and pedagogical reasoning. As Johnson and Christensen (2014) note, proposing effective innovations is difficult without exposure to diverse teaching methods, causing many PSTs to default to traditional approaches. To encourage original thinking, coursework should provide concrete examples of ELT innovations. Additionally, constructing research instruments and managing research processes often remain difficult for PSTs, even after completing research courses, due to the need for strong methodological understanding and practical skills (Fraenkel et al., 2019). Limited research knowledge can also impact the trustworthiness of results (Creswell, 2018). Therefore, structured support through regular consultations with advisors and school supervisors is recommended.

Writing issues present another significant challenge, including articulating research problems, defining key terms, organizing literature reviews, presenting results, and writing discussions. These tasks require both technical accuracy and critical engagement with the literature (Booth et al., 2016), which can be overwhelming for those with limited academic writing skills. The gap between theoretical coursework and real-world academic writing is particularly apparent when presenting varied and context-specific CAR data. Furthermore, maintaining objectivity and adopting an appropriate academic tone present additional difficulty (Imsa-ard, 2024). To address these issues, teacher education programs should offer explicit writing support through scaffolded activities, exemplary models, peer review, and targeted feedback.

Personal issues also significantly influence PSTs' ability to complete CAR, as they often juggle multiple roles. The combined demands of the teaching practicum and research frequently result in stress and fatigue. As Farrell (2016) highlights, novice teachers are often expected to perform as experienced teachers from the start. A more supportive and balanced practicum framework is therefore needed to ensure responsibilities are aligned with PSTs' experience and capacity; otherwise, motivation and engagement may decrease without sufficient support.

The findings highlight the crucial support role of research advisors during the CAR process, with many PSTs relying heavily on them at nearly every stage. This reliance indicates insufficient preparation for independent research. This reliance indicates insufficient preparation for independent research, which aligns with Faikhamta and Clarke (2015), who found many PSTs misunderstood action research and held negative attitudes that led to superficial practice. Such reliance raises concerns about readiness for professional practice, where teachers are expected to conduct CAR independently. Insufficient preparation can cause flawed CAR implementation and missed opportunities for classroom innovation.

The findings highlight concerns about developing research self-efficacy and metacognitive skills, both crucial for independent CAR. Research self-efficacy, the belief in one's ability to carry out research at all stages (Pentang & Domingo, 2024), is often underdeveloped in PSTs, leading to dependence on external support and superficial approaches. Structured and authentic research experiences can enhance this confidence (Manitzas et al., 2022), making their integration into coursework and practicum

essential. Similarly, metacognitive skills, awareness and regulation of one's cognitive processes (Damayanti et al., 2021), are vital for reflective decision-making throughout CAR and closely linked to academic and research success (Güner & Erbay, 2021; Isaacson & Fujita, 2006; Rivas et al., 2022). Stanton et al. (2021) recommend explicit instruction, modeling, and feedback to develop metacognitive skills.

Based on the findings, Thai PSTs face specific challenges, including identifying classroom problems, developing pedagogical innovations, creating and validating instruments, implementing innovations, and reviewing literature. These are practical, context-specific difficulties that go beyond general research knowledge, highlighting gaps in applying research skills in real classrooms and pointing to a need for more targeted, experiential research training in teacher education. Similar challenges, including difficulties with data analysis and interpretation (Oestar & Marzo, 2022), writing anxiety (Tindowen et al., 2019), and limited research skills (Irfan et al., 2023; Thu & Than, 2021), are commonly reported across ASEAN, underscoring the importance of strengthening research preparation and support systems for PSTs across the region.

Given the challenges PSTs face when conducting CAR, they require adequate skills training. These issues should be adequately addressed by stakeholders to enhance their research capabilities, which are essential for professional growth and long-term teaching effectiveness. Equipped with research skills, members of the teacher community can support one another in creating meaningful innovations that address shared challenges and contribute to meaningful change.

Implications

The results offer implications for the following four groups. Lecturers should embed research knowledge and skills into courses, engaging PSTs in developing activities and assessments relevant to CAR. Curriculum developers are encouraged to add research-focused modules or training to the ELT curriculum, as CAR in ELT requires interdisciplinary expertise. Structured training should guide them through each research stage and address specific challenges identified in this study.

School and university supervisors should establish a structured consultation process with ongoing mentoring, progress monitoring, and resource access. Addressing common pitfalls, such as copying published research designs, is crucial since CAR has unique purposes and structures. Clear guidance is needed to ensure originality and ethical practices.

School authorities, as key decision-makers, should address the challenges identified in this study by formulating policies and providing training that equips novice teachers with essential research skills. Focusing on issues such as problem identification and instrument development can support their professional growth and contribute to improved teaching practices and student learning outcomes. Cultivating a school culture that values research is a vital step toward sustainable educational improvement.

PSTs should recognize that research is a complex process requiring diverse knowledge and skills. Regular consultation with experts can prevent misconceptions. However, a careful literature review is essential as research designs, instruments, and statistics are context-dependent, which cannot apply to all kinds of research.

Most importantly, the challenges PSTs face in conducting CAR cannot be effectively addressed without the active collaboration of key stakeholders, as these issues are deeply interconnected. Establishing ASEAN-wide teacher research networks that include key stakeholders is essential for promoting the exchange of best practices and strengthening the regional teacher education community, grounded in our shared identity as educators within the ASEAN context.

Conclusion

Conducting research is inherently challenging, especially for PSTs undertaking it for the first time alongside their teaching practicum. While CAR is promoted in teacher education to encourage reflective practice, many PSTs still face significant difficulties with its implementation. This qualitative study explored the challenges encountered by twenty-three pre-service English language teachers during CAR and their strategies for overcoming them. Focus group interviews were conducted with participants selected through purposive sampling, and the data were analyzed using content analysis.

The study identified three main challenges: *research-related*, *writing*, and *personal issues*. To address these challenges, PSTs relied heavily on advisors and literature reviews, highlighting the need for improved CAR training. Their reliance on advisors throughout the research process suggests that many PSTs are not fully prepared to undertake CAR independently, raising concerns about their readiness for future teaching roles without support.

Although the small sample size and regional focus limit generalizability, the findings

offer useful insights for similar contexts. Future research could examine ways to integrate research training into ELT curricula, improve supervision models, and assess the long-term impact of research experiences on PSTs' professional development. Cross-institutional studies are also recommended to broaden understanding of effective CAR practices in teacher education.



Statements and Declarations

There are no competing interests to declare.

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