

*Original Research*

# Collaborative Classroom Action Research: Empowering Pre-service and In-service EFL Teachers to Gain Professional Development

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## Abstract

This qualitative case study investigates the impact of collaborative classroom research on pre-service and in-service English as a foreign language (EFL) teachers' professional development. One pre-service, technologically literate teacher with no formal teaching experiences and an in-service EFL school teacher with adequate teaching experiences who worked in pairs to carry out a classroom action research project were the participants. They worked on the classroom problems found during internship term and attempted to find the way to overcome them through technology integration in the instruction. Several data sources used to find out how the collaborative research worked are as follows: teaching journal, interview with open-ended questions, and documents needed for teaching-learning activities such as lesson plans. Qualitative analysis revealed that (1) the in-service teacher felt more helped in utilizing technology, especially in the use and making of podcast for teaching listening. The teacher's years of experience in handling teaching learning process in the class compiled the pre-service teacher's competence as a novice teacher; and (2) The pre-service teacher obtained precious experience in practical research to become a teacher as a researcher with fresh ideas, especially in technology-enhanced instruction. Challenges from both perspectives were also found in terms of workload, internship duration, feedbacks, digital literacy, pedagogical belief, and publication. The study concludes that collaborative classroom research can be a valuable tool for professional development among EFL teachers worldwide. The study highlights the need for further research in this area to explore the other parties involved in the collaborative research such as other in-service teachers and university researchers.

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## 1. Introduction

The issue of teacher professional development has become a part of global restoration to gain professionalism in instructional pedagogy. In Indonesian context, as a means of professional development for teacher profession, an obligation of doing classroom action research has been implemented. This is in line with the view that action research is seen as powerful means to gain teachers' professional development, or in other words, teachers accomplishing classroom-based action research frequently indicate significant improvement in instructional process (Meesuk et al., 2020). Since 2009, based on the regulation of the Minister of State Apparatus Empowerment and Bureaucratic Reform number 16 year 2009, teachers at any school levels in Indonesia are obliged to do continuing professional development, one of which is making a scientific publication. Classroom action research is the most popular classroom-based research among teachers to fulfil the requirement in order to gain academic rank and professional teacher certification. In doing the classroom action research, teachers are frequently found to have difficulties in conducting the research (Kunlasomboon et al., 2015; Pantiwati et al., 2023; Wahyuni, 2020), and to encounter the problem,

collaboration with other teachers are possible (Anne Burns, 1999; Kunlasomboon et al., 2015; Willegems et al., 2017). Through this way, Indonesian teachers are expected to do self-development in improving the classroom instructional technique and to get better career path and benefits from government.

The basic reason why classroom action research is conducted is due to problem identification felt by the teachers in the class. The learning problems can be solved with the technology application as teaching aids and integration to the instructional strategy. In post pandemic time, technology plays an essential role in ELT and many teachers are expected to assimilate technology into their instruction, and the main concern is the lack of preparedness among teachers to do that, especially with Technological Pedagogical Content Knowledge (TPACK) (Mainake & McCrocklin, 2021). It is interesting to note that from Mainake & McCrocklin's survey research, many Indonesian teachers have positive attitudes to technology in classroom by using it in various types such as PowerPoint, resourceful websites, and multimedia. However, their usage is only limited to the default features of the technology software or applications without expanding them in more advanced ways.

Teachers, especially the beginners, are confronted with issues such as classroom management, individual differences, behavioural problems, dealing with parents, and others. As a form of effective teacher professional development to address those issues, collaborative action research is possible to do (Mitchell et al., 2009). The term collaboration can be longitudinal collaboration with other teachers (Sato et al., 2022), pre-service teachers, and university supervisors (Willegems et al., 2017). The goal of this collaboration is to develop an evidence-based answer to a mutual concern in practice that will eventually enhance pupil learning. Also, participation in a systematic reflection and inquiry process contributes to empowering in-service teachers to become agents of pedagogical change through their own actions (Pellerin & Nogués, 2015). Teachers who collaborate in action research are about to involve in the socio-cultural practices of a teaching environment or teaching community. Not only can be done with other colleagues in an institution, but collaborations are also possible to do with pre-service teachers. Interestingly though, in Indonesia, there is a good partnership between schools and universities, especially those which are education university based. This form of partnership are based "on mutual concern to improve the learning of all parties involved (Willegems et al., 2017, p. 232)."

Teacher research is considered an important aspect in professional development for career. Classroom action research is a part of teacher research practice which has sustainable impacts to the teacher professionalism in motivation, pedagogy, and professional competence research conducted by teachers is mainly classroom-based with the objective that they can address the daily teaching problem in the class. The research conception among teachers is familiarly called action research (AR). Burns (2019) highlights the terminology of 'teacher research' as one thing considered as a method of professional learning for language teachers which takes a socioconstructivist line in which teachers are seen as agentic actors within their own social contexts. One of the main aims of AR is to identify a 'problematic' situation or issue that the participants – who may comprise teachers, students, managers, administrators, or even parents – consider worth looking into more deeply and systematically (Burns, 2009). The term 'problematic' used by Burns is not to show that the teachers are incompetent in their field, but to indicate that there is a gap between the reality of what is happening in the class and what we ideally like to see to happen. It means that there is frequently problem found in the classroom teaching, and the job for the teachers is to solve the problem using their expertise and experiences through research. As a result, they begin to understand themselves more as better teachers by making better decisions and preferences when they get involved during their research because they own the autonomy (Wang & Zhang, 2014).

There are three main reasons for teachers across the globe in doing research: (1) to find better ways of teaching, (2) to solve problems in their teaching, (3) and because it is good for professional development. This is different from the other two options, employer expectation and promotion, which gain less response. The three goals indicate that the role of teacher is of course an addressing classroom problem which eventually makes them to gain professional development. In contrast to that, there are common reasons why teachers do not conduct action research. Lack of time, lack of research knowledge, and opinion that they are teachers not researchers are found in the survey.

To promote professional learning, collaborative action research teams including multiple actors must be done. It is aligned with Vygotsky's Zone of Proximal Development, establishing collaborative actions in teacher education enables pre-service teachers to learn what they are not ready to do on their own (Willegems et al., 2017). Collaborative action research emphasises on creating inquiry atmosphere in

communities of practice, usually with different stakeholders functioning as co-researchers (Mitchell et al., 2009). The collaboration team comprise the teachers' colleagues or even pre-service teachers as university representatives during internship program. Many authors (Sahlin, 2020; Emstad & Sandvik, 2020; Jakhelln & Postholm, 2022) have discussed the significance of university–school collaboration with regard to its impacts on participants involved. Willegems et al. (2017) highlight that from the partnerships pre-service teachers appear to learn more from in-service teachers. Collaborative teacher research, including both Preservice Teacher (PTs) and Inservice Teacher (ITs), requires partnerships between universities and schools that are based on the mutual concern to improve the learning of all parties involved. In addition, early field experiences in classrooms are essential to promoting the professional development of pre-service teachers (Levin & Rock, 2003). The field experience itself is valuable because pre-service teachers need to experience the context of schools and begin to observe the everyday happenings from a teacher perspective.

This present study is intended to explore how professional development is possible to be conducted simultaneously between in-service teacher and preservice teacher during internship program. The presence of preservice teachers at schools during teaching internship brings a new concept of traditional research collaboration which is previously, commonly done among in-service teachers. Both preservice and in-service teachers have strengths and weaknesses, and when they meet for collaborative research, they will complement each other. Such collaboration, between preservice and in-service teachers, is under a partnership between schools and universities. Indonesian colleges primarily focusing on English language education must have partnerships with schools every year for student teacher internships as well as students' research for undergraduate thesis. Through this research, the framework of such collaboration and its impact on both pre-service and in-service teachers will be revealed and investigated in-depth. Moreover, teachers in Indonesia must do classroom action research, especially for professional promotion, and one of the advantages of having pre-service teachers at schools is to do collaboration for research.

Turning to the research gaps, this research highlights two points to consider. While there may be studies on classroom action research and professional development for teachers, there may be limited research on how preservice teachers are involved in teacher collaboration for professional development. Preservice teachers in the current times are seen to have good digital literacies and technological innovations. Also, there may be limited research on the specific factors that promote or hinder successful collaboration in this context. Further research in this area could provide valuable insights into the strategies and approaches that can be employed to support effective collaboration among teachers in conducting classroom action research. By identifying the factors that promote or hinder collaboration, educators and policymakers can develop more effective strategies for supporting teacher collaboration and enhancing the outcomes of classroom action research for professional development.

## **2. Literature Review**

### **Vygotsky's Socio-cultural Theory of development**

The sociocultural theory comes from a Russian psychologist, Lev Vygotsky, along with his colleagues which has imposed effects on psychology of education as a whole. One of the important concepts of sociocultural theory is that the human mind is mediated which is organized by cultural artefacts, activities, and concept (Lantolf et al., 2014). The two key points and influential ideas of Vygotsky's SCT are (1) mediation and artefacts, and (2) Genetic Method.

The artefacts 'include material tools and symbolic tools (language) and their primary unit is human cognition (Orland-Barak & Maskit, 2017). The theory indicates that the origin of knowledge construction should not be sought in the mind but in the social interaction co-constructed between a more and a less knowledgeable individual (Lantolf et al., 2014). Moreover, the construction of knowledge is a sociocultural mediated process affected by the physical and psychological tools and artefacts. Genetic method can be explained as an approach to scientific research proposed by Vygotsky in which the development of individuals, groups and processes are traced over time with the evidence of historical perspective (Lantolf et al., 2014). In the ease of timespan, development surely occurs over the course of months, years, or even the entire lifespan of an individual or group, it may also occur over relatively short periods of time. The essence of Vygotsky's SCT attempts to comprise the processes in which 'learning and development' happens and 'social interaction' becomes the mastermind of individual development changes. Its implication for education sector is synthesized by Eun (2008) into examples of professional development practices in the following table.

Table 1. Professional development practices

Key Theoretical Concepts	Related Professional development practices
Social interaction	Workshops, colloquia, seminars, mentoring, study groups
Internalization	Individually guided activities (video self-assessment, journal writing)
Mediation	Continuous follow-up support that includes the three types of mediators' tools (materials resources); signs (newsletters and journals); and other humans (professional networks).
Psychological systems	Development of professional development programs that focus on changing teachers' attitudes as well as instructional practices.

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### 2.1 Teacher's Autonomy in their Research

Teacher research is considered an important aspect in professional development for career. Research conducted by teachers is classroom-based with the objective that they can address the daily teaching problem in the class. The research conception among teachers is familiarly called action research (AR). Burns (2009) highlights the terminology of 'problematic' as one thing that teachers should identify in the class and seeks for the possible solution by conducting research. One of the main aims of AR is to identify a 'problematic' situation or issue that the participants – who may include teachers, students, managers, administrators, or even parents – consider worth looking into more deeply and systematically (Burns, 2009). According to Borg's survey of research conception (2009), there are three main reasons for teachers across the globe in doing research: (1) to find better ways of teaching, (2) to solve problems in their teaching, (3) and because it is good for professional development.

### 2.2 Teachers' Collaborative Action Research

To promote professional learning, collaborative action research teams including multiple actors must be done. It is aligned with Vygotsky's Zone of Proximal Development, establishing collaborative actions in teacher education enables pre-service teachers to learn what they are not ready to do on their own (Willegems et al., 2017). Collaborative action research emphasizes on creating inquiry atmosphere in communities of practice, usually with different stakeholders functioning as co-researchers (Mitchell et al., 2009). The collaboration team comprise the teachers' colleagues or even pre-service teachers as university representatives during internship program. Many scholars have discussed the significance of university-school collaboration regarding its impacts on participants involved. Willegems et al (2017) highlight that from the partnerships pre-service teachers appear to learn more from in-service teachers. Collaborative teacher research, including both PTs and ITs, requires partnerships between universities and schools that are based on the mutual concern to improve the learning of all parties involved. In Addition, Early field experiences in classrooms are essential to promoting the professional development of pre-service teachers. The field experience itself is valuable because pre-service teachers need to experience the context of schools and begin to observe the everyday happenings from a teacher perspective.

## 3. Method

This study adopts a qualitative approach with a case study design. According to Creswell (2005) qualitative research attempts to develop a complex portrait of the issues addressed under the study. The case study design allows for an in-depth investigation of a particular case, which in this study is the collaboration between a pre-service teacher from an English education department and an in-service teacher from a private vocational senior high school in Bangkalan.

Two instruments were used in this study: interview and document analysis. Five open-ended questions were given to both teachers, focusing on the contribution of collaborative action research towards their professional development. The questions covered the stages of before, during, and after the research, as well as any challenges faced during the collaboration. Data were also collected from teaching journals and lesson

plans. The data were analysed qualitatively, following [Creswell's \(2005\)](#) method of data analysis, which aims to develop a comprehensive portrait of the issue under investigation.

The in-service teacher has ten years of teaching experience and is one of the experienced and senior teachers at the school. The pre-service teacher is a sixth-semester student from the English education study program and has completed a pre-apprenticeship course, which included peer teaching and microteaching programs. The pre-service teacher was deployed to the in-service teacher's school to assist with teaching and other academic or instructional activities, including collaborative action research.

The study was divided into four stages: preparation, identification of the current situation, doing the research, and reflection. During the preparation stage, the research program was introduced to the school, the pre-service teacher, and the headmaster. Consent letters were obtained from the headmaster and the teachers. The identification of the current situation aimed to get a picture of the teachers' perceptions of action research and how they have been doing it with pre-service teachers. The collaborative action research project started in the third stage, and the final stage focused on investigating the impact of the collaboration on the teachers' professional development and students' learning.

This study has limitations, such as the small number of participants and the unique case, which may limit the generalization of the findings. However, the aim of this study is to provide a voice of professional development practice happening in a school setting, and it contributes to the growing body of literature on collaborative classroom-based research.

#### **4. Results**

On this section, the researcher elaborates more attention in finding out how collaboration between in-service teacher as the experienced, established teacher at a vocational senior high school and pre-service teachers. This research is to explore the possibilities of conducting professional development simultaneously between in-service and pre-service teachers during the internship program, and to identify the challenges that arise during the collaboration action research process. The research questions guiding this study are: (1) How is professional development possible to be conducted simultaneously between in-service teacher and preservice teacher during internship program? and (2) What are the challenges faced by both pre-service and in-service EFL teachers when doing the collaboration action research? By addressing these research questions, this study seeks to contribute to the development of effective professional development practices that enhance the collaboration between in-service and pre-service teachers in the context of EFL education.

##### **4.1 Manifestation of Professional Development towards Pre-service Teacher**

Collaborative action research requires clear roles to distribute the assignments on the implementation. This is not just a collaboration between the two. It turns out that during the research the pre-service teacher acted as the co-researcher as well as the observer. This means that her role lies as the second person assisting the main researcher.

“As a student assisting the research, my role is as a co-researcher and observer. I helped the teacher prepare the whole instruments used in the class. I also gave ideas of teaching that became the strategy used during the research.”

(Preservice Teacher / interview / Q1)

It is apparent that the pre-service teacher assisted the in-service teacher on the document preparation process. The main teacher gave open opportunities for the novice teacher to get involved in designing and making instruments that they would apply on the research. Despite being in apprenticeship, the pre-service teacher got opportunity to be practically involved in the real classroom-based research.

“The collaboration benefited me in terms of initial research experience. This was my first-time classroom-based research. I had a new experience how to do classroom action research. I could involve designing a teaching scheme, and how to overcome listening problem in the class. This was done with the mentoring from the in-service teacher.”

(Preservice Teacher / interview / Q2)

Based on the interview answer, it turns out that the mentor teacher gave the main guidance to address the listening problem faced by the pupils. The preservice teacher attempted to show her authority and right to give ideas of teaching strategy to be applied in the class. From the answer, there is one significant measure

named mentoring. Mentoring could be a model in which a less experienced teacher is accompanied by a very experienced teacher with the hope that the discussion or mentorship can yield sharing of ideas effective practice, reflection on current methods, on-the-job observations, and strategies for improvement

#### **4.2 Manifestation of Professional Development towards In-service Teacher**

The manifestation of professional development done by the experienced, in-service teacher was seen on the reinforced practice of the research itself. From the research finding, it was revealed that the in-service teacher was not quite literate with the use of technology on language teaching. The reinforcement gained by the in-service teacher is the presence of the preservice in providing good suggestions towards what best practices that could apply to the collaborative research.

“Frankly speaking, I am not too updated with the advancement of technology. I could only operate basic technology media such as PowerPoint slides, operating video player, and music player. With the collaboration, I was benefited by Kudriyah (pre-service teacher) to provide new method, strategy, or media that I would use in the research. I implemented the use of Podcast as her idea to teach listening.”

(In-service Teacher / interview / Q3)

In line with that, technology utilization was confirmed with the use of podcasting towards the collaborative research on the documentation, i.e. from the lesson plan and research journal. As it was stated before, this idea of implementing this technology was derived from the preservice teacher. The lesson plan composed had learning objective of understanding oral functional and monologue descriptive text in listening skill. The teaching topic raised in this action research was about describing people and things, and the preservice teacher utilized podcast audio files.

“I got an advantage with this collaboration. I got new ideas of teaching with technology, especially listening to attract students’ attention for the English subject, especially for listening lesson. Vice versa, I could guide or mentor the pre-service teacher how to teach listening effectively based on my teaching experience. Previously, I have never done a serious research activity. I just did an informal research practice. The presence of PT in my class could assist me to remind the research stages, to give fresh ideas, and to complete my limitations.”

(In-service Teacher / interview / Q4)

#### **4.3 Challenges from Both Perspectives**

“Preparing many instruments is quite challenging for me. I needed to prepare the tests, observation sheets, and lesson plans. The administrative tasks are more complicated than I expected.”

(Preservice Teacher / interview / Q5)

The positive thing was that the pre-service teacher could be more getting valuable experience in preparing teaching kits before the research. However, it was seen that there were less feedbacks while and after the research accomplishment. Communication becomes crucial when both teachers perform collaboration for their professional development. Yes, the teacher had already given the guidelines and mentoring about the lesson plans and assessment sheets, yet the pre-service teacher could still feel more burdened. Nevertheless, this is still a positive thing to note. Limited time allotment for the apprenticeship also becomes a challenge for the pre-service teacher. 30-day period of apprenticeship was seen inadequate to adjust or adapt the situation to perform collaborative action research.

“The only challenge that I faced was that I could not fully master the use of podcast in the listening lesson. Even though I have learned how to use it before, I still got difficulties in operating it from my laptop. I still needed the assistance of the pre-service teacher to implement it in the class.”

(In-service Teacher / interview / Q5)

From the perspective of in-service teacher, it was found less mastery of technology-enrich learning. Teacher in the 21st century with digital era, just like today, is required to master the advancing of technology in English language learning. It seems that technology integration, including TPACK-based, is inevitable in EFL classroom. The widespread of cutting-edge technology products, especially the digital ones, has been very common in post-pandemic period. Last, it turns out that the in-service teacher needs more guidance to publish the research results. It cannot be done with the apprentice pre-service teacher with the lack of experience in publishing works of research articles. The role of another party could fill this gap, such as university instructor with publication experiences.

Table 2. Challenges faced during collaboration

Pre-service teacher	In-service teacher
Being given responsibility to prepare teaching kits and instruments	Less mastery of technology-enrich learning
Limited time allotment	Different pedagogical beliefs or perspectives may occur
Less feedbacks given	Need more guidance to publish the research results

Table 2 presents the challenges faced by both pre-service and in-service EFL teachers during the collaboration action research. There are various obstacles that may impede effective collaboration from the views of pre-service and in-service teachers, such as communication barriers, time constraints, and differing opinions. Furthermore, it shows that pre-service teachers may struggle with taking the lead in the project, while in-service teachers may find it difficult to adjust technological capability and to balance their existing workload with the demands of the research. It has been found that from the research, in-service teacher tended to give more freedom to the pre-service teacher in terms of preparing the required things before the research. The pre-service teacher felt to be more given more workload in preparing teaching kits and assessment sheet.

In this study, the collaboration between an experienced in-service teacher and a pre-service teacher in a vocational senior high school was examined. The findings show that the pre-service teacher acted as a co-researcher and observer and assisted in the document preparation process. The mentoring and guidance provided by the in-service teacher helped the pre-service teacher gain new experiences in classroom-based research. Additionally, the in-service teacher was benefited by the preservice teacher's suggestions towards using technology for language teaching. However, challenges such as limited time allotment for the apprenticeship and lack of feedback were encountered. It can be said that this collaborative research is beneficial for both parties in terms of their professional development.

## 5. Discussion

Classroom action research is a powerful tool for promoting professional development among both in-service and pre-service teachers (Mertler, 2017; Burns & Rochsantiningsih, 2006). By working together, these educators can collaborate on projects that focus on improving student outcomes and enhancing their own teaching practices. Through the process of conducting research, these teachers can develop new skills, expand their knowledge base, and gain a deeper understanding of teaching and learning. In addition, this type of collaborative research can help to bridge the gap between theory and practice, as pre-service teachers bring fresh perspectives and in-service teachers offer practical insights from their classroom experience.

Professional development is not merely aimed for teachers who are already in service or on duties. Pre-service teachers who are taking part on internship program need to perform professional development as well. For in-service teachers, continuing professional development as a integral part of professional development is a dynamic process which leads to external and internal behaviour and condition, either conducted personally or contractually (Yang, 2021). This is due to the motivation of the teachers themselves in doing the professional development, although in some places, CPD is done mostly because of an obligation from workplace in terms of job requirements instead of personal drive (Bernardo et al., 2020). On the other side, in-service teachers are required to perform continuing professional development as they need to initiate professional development as novice teachers. It can be seen from the findings that the outcome of preservice teacher is in the form of implementation of new instructional strategies, assessments, and technologies (Rutten, 2021).

Collaborative action research is another means of professional development that can be done among teachers (Nurhasanah et al., 2020), including with preservice teachers (Levin & Rock, 2003). Collaboration action research can be an alternative way to meet the two characteristics between pre-service teachers and in-service teachers (Zhu, 2022). Preservice teachers tend to have characteristics such as fresh ideas, idealistic, energetic, and knowledge updated. In-service teachers, however, tend to have characteristics like experienced and senior. These two kinds of teachers have strengths and weaknesses and when the collaboration begins, they can fulfil the gaps each other. In other words, in-service teachers may have years of teaching experience and a deep understanding of classroom dynamics, but they may be less familiar with

new technologies or innovative teaching approaches. On the other hand, pre-service teachers may be more tech-savvy and open to trying new teaching methods, but they may lack the practical experience and knowledge of classroom management that comes with years of teaching. The collaboration obviously supports initial and improvement of professional development, ideas sharing of new teaching methods, and teacher motivation (Havu-Nuutinen et al., 2019). Collaborative action research assists pre-service teachers to train themselves in terms of reflective abilities in professional development practices when taking part in a learning community filling the gaps left by the absence of some tutors' good examples (Qing-li et al., 2019). What it means as reflective abilities is that both pre-service and in-service teachers must have soft skills of reflecting themselves what they have accomplished and what they have not. The capability in evaluating themselves is also a part of reflective abilities.

When given an opportunity to do more during the collaboration, the pre-service teacher attained more appreciation. The pre-service teacher could thrive her confidence in her ability to problem solving (Gutiérrez et al., 2019). This indicates that the typical characteristic of pre-service teacher is full of updated ideas especially with technology. The pre-service teacher has extensive knowledge in terms of technology in language education. Moreover, preservice teachers must be trained to have a more technology-literate competency when learning in higher education institution, one of which is through the teacher education program that emphasised on the technology-enriched teaching (Raulston & Alexiou-Ray, 2018).

One of the benefits of doing such collaboration is both teachers could gain more engagement in their own role, one of which is mentor-mentee relationship. This is significant for the individual confidence and resembles a key factor for initial teacher education for pre-service teacher (Wilson & Huynh, 2020). With the roles of tasking shared between them, the research project helped them to create mentor-mentee relationships that are more meaningful dan mutualistic in collaboration (Levin & Rock, 2003). It is suitable with the concept of Vygotsky's Zone of Proximal Development, establishing collaborative actions in teacher education enables pre-service teachers to learn what they are not ready to do on their own (Willegems et al., 2017). As the 'inexperienced' teacher with practical, empirical actions in the class enables the preservice teacher to get an advantage to do what she could not do alone. The emphasis on collaboration is the key, in which professional development is sustained overtime through the collaboration itself (Jacobsen, 2019).

From the interview response, it seems that the in-service teacher emphasized that the advantages were felt not only for her, but also for the pre-service teacher. Beside the advantage of fresh ideas of technology-enrich teaching, the in-service teacher could do mentoring as she mentioned the word 'guide or mentor'. Through mentoring, both in-service and pre-service teachers may have prospects to do self-reflection, escalate their successes, have some improvement on their performs, and learn from others' practices as well as helping each other (Purnamasari, 2020). Also, mentoring is also one model of professional development from sociocultural perspective (Lantolf et al., 2014). Mentoring could be done either on co-teaching practices (Howlett & Nguyen, 2020) or in collaborative action research (Gibson, 2016). The preservice teacher stated that she was given an opportunity to expand the ideas of teaching strategy or teaching aid on the research. It indicates that the preservice teacher experienced a social interaction as a part of mentoring (Eun, 2008) in professional development of Vygotsky (Paesani, 2020). Mentoring can be in the form of guiding pre-service teachers to teach with the basis of teacher education reforms (Orland-Barak & Wang, 2021) and also mentoring teachers in doing classroom action research (Dewi, 2021). What happened during the research finding was that the in-service teacher mentored the pre-service teacher with the experienced the teacher have had. The in-service teacher teaching experience in the process of conducting classroom action research. Both parties were benefited on each portion. As what Békés (2020) has suggested that mentoring is two-direction activities which benefit both the mentor and the mentee, yet the positive points gained from the mentorship should be recognized institutionally and the practice should be prolonged.

Basic mastery of CALL approach just like using PPT slides, videos, and music players is a basic skill of typical teacher in urban areas in Indonesia. Despite so, that is still valuable and helpful for teaching EFL with basic IT skill. In post pandemic time and with the rapidly updated technology development, the need of high technology literacy among teachers is inevitable. The use of mobile-assisted language learning platforms, technology-mediated tasks (Zainuddin, 2023) as well as Artificial Intelligence (AI) (Mills et al., 2022) can be a great option. To support contextualized and immersive experiences with learning materials, virtual reality videos are also worth being considered (Huang et al., 2023). Despite so, the limitation was addressed by involving the pre-service teacher to collaborate each other to deal with the weaknesses. In these current times, this is commonly accepted that all empowerment must have critical thinking capability, team

player, collaborators, users of technology, and personal drive of lifelong learning (Martinovic et al., 2019). The in-service teacher, at least, was align with collaborators and technology users.

Running collaboration research, and at the same time, performing professional development together apparently has difficulties faced by both teachers. Difficulties seem to happen during the practice of collaboration. From the practices of collaboration such as collaborative learning as studied by Le et al. (2018), one of the challenges faces is the pre-service teachers' lack of collaborative skills. As the initial teacher, that is normal happens a lot with the stigma of 'inexperienced' label. However, that is the where the professional development occurs. Despite so, the pre-service teacher often sees herself as an assistant instead of co-researcher. This is in line with what Willegems et al. (2017) found in the study. Also, it is added by Willegems et al. (2017) that the inservice teacher as the mentor teacher has limitations in feedbacks and joint reflection.

Despite an obvious professional development conducted by both teachers, this present study has several constraints. The main concern is that the research collaboration period really depended on the internship duration. The pre-service teacher involved in this study is in the program as a part of curriculum in the study program at the university. With the limited time allotment, the research timespan could not be very long. Also, this research was conducted in a single school with the category of private school. This, of course, cannot be generalized into other kinds of schools such as public or vocational schools. Further research should be extended to multiple case design and find out how collaborative action research between pre-service teachers and in-service teachers in different kinds of schools such as public, religious, or even vocational.

Based on the findings discussed earlier, it can be concluded that professional development is an essential part of both pre-service and in-service teachers' development. The study shows that pre-service teachers can benefit from professional development by collaborating with in-service teachers through action research. Collaborative action research provides an opportunity for pre-service teachers to develop reflective abilities, increase their confidence, and acquire updated knowledge, particularly in technology-enhanced teaching. The study also indicates that mentor-mentee relationships are significant for initial teacher education for pre-service teachers. In-service teachers can serve as guides or mentors to pre-service teachers by sharing their experiences, knowledge, and practices. Furthermore, professional development can be sustained over time through collaboration, mentoring, and continuing professional development.

## 6. Conclusion

In conclusion, this research has explored the impact of collaborative classroom research on pre-service and in-service English as a foreign language (EFL) teachers' professional development altogether. It demonstrates how collaboration in conducting classroom action research can enhance the quality of teaching and learning in the EFL classroom. By working together to identify and solve classroom problems through technology integration, the pre-service and in-service teachers were able to share their knowledge, skills, and experience, resulting in a more effective and efficient learning environment. The case study identified separate problems experienced by the teachers; workload, internship duration, and feedback of research was experienced by the preservice teacher, while the in-service teacher encountered the issue of high technology literacy, pedagogy perspective, and publication follow-up. Technology-mediated tasks, mobile assisted language learning platforms, and artificial intelligence are likely to support language learning, but professional development of both is reached with their own portion as a novice and senior teacher.

This research highlights the need for more collaborative research in the field, particularly as a means of promoting professional development among EFL teachers worldwide. The findings suggest that collaboration can help to bridge the gap between theory and practice and promote the development of more effective and innovative teaching practices. Also, this research emphasizes the importance of technology integration in the EFL classroom. By using technology to enhance instruction, teachers can create more engaging and effective learning experiences for their students and help to prepare them for success in an increasingly digital world. There is a need for further research in this area, particularly to explore the impact of collaborative classroom research on other parties involved, such as other in-service teachers joined in teacher forums and university researchers. Additionally, more research is needed to explore the challenges and limitations of collaborative research, particularly in terms of workload, internship duration, feedback, digital literacy, pedagogical belief, and publication. Despite these challenges, the research demonstrates that collaborative classroom research can be a valuable tool for professional development among EFL teachers.

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