

# Roles of two PD modes in technology integration for EFL classes: Training and professional learning communities

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A wealth of literature has acknowledged that technology is at play in enhancing English as a foreign language (EFL) education and thus EFL teachers have been strongly encouraged to integrate technology into their instruction. To successfully integrate technology, they need expertise obtained through effective professional development (PD) modes, especially training and professional learning communities (PLCs). Our study sought to investigate the training and PLCs that EFL teachers have received and their roles in technology integration. Using semi-structured interviews with all EFL teachers (N=15) working at two of Cambodia's New Generation Schools (NGSs) and one ICT team leader and relevant document reviews, we found that teachers have participated in both training (pre-and in-service training) and PLCs and the two modes played roles in technology integration. EFL teachers suggested that effective training encompasses being the subject focus, offering hands-on experience, providing them with opportunities to learn various types of technology, and allocating adequate time to the training. They identified the lack of opportunities to discuss technology use in PLCs because of additional administrative duties imposed by their respective schools, and thus, for effective PLCs, they suggested more time allocated for discussing and sharing technology integration, and more active involvement of all members in sharing and assisting one another. Our findings can improve training programs and support for effective PLCs in which EFL teachers could learn and share technology integration.

## Introduction

In recent decades, there have been substantial shifts in the way English is taught and learned. These deviations can be attributed to the widespread availability and accessibility of various types of technology and the important roles they play in the *English as a foreign language* (EFL) education milieu. The body of extant literature (e.g., Bajrami & Ismaili, 2016; Chaaban & Ellili-Cherif, 2017; Liang, 2021; Lin & Wang, 2021; Mehring, 2016; Noori, 2019) acknowledged that technology integration in EFL classes has offered numerous benefits to students' learning. It is an imperative part of teaching and learning languages in the 21st century (Noori, 2019). For instance, it could help teachers develop students' intercultural competence (Zhang & Zhou, 2023), another important skill that EFL learners need in today's world of globalisation, mobility, and migration (Bon, 2022). EFL teachers are therefore expected to integrate technology into their classroom instruction. For teachers to successfully integrate technology, they need sufficient knowledge and skills in using technology. The existing literature indicates that professional development (PD) is at play in helping EFL teachers acquire the knowledge and skills needed for technology integration (Chaaban & Ellili-Cherif, 2017; Utami & Prestridge, 2018; Zhou et al., 2022).

That said, various forms of the term *PD modes* are used in our study as a convenient brief label for a set of PD activities (see Donaher & Wu, 2020, p.109-111; OECD [Organisation

for Economic Co-Operation and Development], 2009. p. 78; Richards & Farrell, 2005). Training and professional learning communities (PLCs) appear to be the two significant modes of PD, as they could complement one another. The study revealed that EFL teachers, because of insufficient PD training, tend to depend heavily on informal training methods, such as collaborative learning, to enhance their technology use (Alghasab et al., 2020). In a similar vein, effective training would provide teachers with the necessary knowledge and skills concerning technology integration that teachers could share with their colleagues through PLCs. Therefore, research should be conducted to investigate the roles of these two PD modes that EFL teachers have received and the characteristics of these two effective modes in technology integration suggested by EFL teachers to help them successfully integrate technology into their classrooms.

In the context of the *New Generation School* (NGS), the new school reform program launched by Cambodia's Ministry of Education, Youth, and Sports (MoEYS), English is a significant foreign language subject (Bon & Chuaychoowong, 2023). All NGS teachers, including EFL teachers, are strongly encouraged to adopt innovative, twenty-first-century instruction, and the use of educational technology in their teaching to improve student learning is one form of such instruction. PD opportunities are provided to all teachers to help them acquire the necessary knowledge, which is believed to help them integrate technology into their classroom instruction. That is, PD includes various modes, two of which are training and PLCs (see Donaher & Wu, 2020). However, providing only PD opportunities for teachers might not necessarily result in increased levels of technology integration within classrooms. As aforementioned, teachers need effective PD training and PLCs for technology integration, and the two can reinforce one another. Previous studies have done little to investigate whether combining these two modes could be effective for enhancing EFL teachers' ability to integrate technology into their EFL classroom instruction. Therefore, research addressing this gap is needed.

## Research objectives and research questions

The current study sought to investigate the training and PLCs that EFL teachers have received and the roles of these two PD modes in enhancing their ability to integrate technology into their English classes. The study also aimed to examine the effective training and PLCs concerning technology integration, as suggested by EFL teachers. The findings would serve as guidelines for conducting prospective effective training and building more effective PLCs where EFL teachers could share and learn technology integration. To attain these objectives, the study addressed the following research questions:

1. What types of training and PLCs have EFL teachers received within their schools?
2. What are the EFL teachers' perceptions of the role of the training in technology integration into their EFL classrooms?
3. What are EFL teachers' suggestions for effective training that enhances technology integration in their EFL classrooms?
4. What are the EFL teachers' perceptions of the role of the PLCs in technology integration into their EFL classrooms?

5. What are EFL teachers' suggestions for effective PLCs that enhance technology integration in their EFL classrooms?

## Professional development

Teachers' professional development (PD) can be succinctly defined as their engagement in various events or activities aimed at acquiring novel knowledge, skills, or strategies that enhance and expand upon their existing knowledge base. The significance of PD in education has become increasingly prominent within the realm of human resources development (Nguyen, 2022). It helps teachers improve their skills, knowledge, and performance to improve students' learning (Krasniqi, 2022). In the language education setting, Richards and Farrell (2005) suggested various modes of teachers' PD, namely, teacher education, workshops, self-monitoring, teacher support groups, keeping a teaching journal, peer observation, teaching portfolios, analysing critical incidents, case analysis, peer coaching, team teaching, and action research.

Recently, some scholars have dismantled the term PD, embracing *professional learning* instead, regarding PD as projecting a notion that *'one size fits all'*. They postulated that when it comes to PD, it is assumed that all teachers who are invited to participate in training lack the same skills and knowledge, whereas the professional learning concept emphasises the idea that different teachers require different training regarding different skills and knowledge (Yu & Chao, 2023). According to Yu and Chao (2023), teachers' PD has focused on helping them become better knowledge receivers by gaining new skills and techniques in the classroom. Unlike PD, professional learning is characterised by self-direction and tailored to an individual's specific professional needs or interests (Yu and Chao (2023). Likewise, for Utami and Prestridge (2018), PD is planned formally and externally, whereas professional learning is more unstructured and is led by the individual. Main et al. (2020) acknowledged that both teachers and their students benefited greatly from professional learning. In other words, teachers who embrace the professional learning concept are more likely to be creative and resourceful, which can have a profound effect on their students' learning (Irwan & Putra, 2021). However, Main et al. (2020) noted that in the literature, PD and professional learning may be used interchangeably, but professional learning is increasingly used to refer to PD. Here in our work, we believe that either PD or professional learning and whether it is structured or unstructured does not matter, but what does matter is whether it provides the teachers with the skills or knowledge they need for technology integration.

## Training

Training in this study refers to any form of PD training programs (e.g., workshops, seminars, and other events), including pre-service and in-service training. Training has been accepted to play a crucial role as teachers need a wide range of knowledge for effective integration of technology into their classroom practices (Kukul, 2023). Diverse studies (Cancino & Ibarra, 2023; Chaaban & Ellili-Cherif, 2017; Kusuma, 2022; Zhou et al., 2022) have suggested that EFL teachers needed training to help acquire knowledge and skills for technology integration, whether novices or experienced teachers (Zhou et

al., 2022). However, some training programs may fail to adequately equip EFL teachers with the necessary knowledge and skills. It is imperative to provide them with effective training.

Effective training should have the potential to change teachers' behaviour and practices. The better the training in technology integration, the more successful it will be (Kukul, 2023). The goal of PD training programs is to disseminate new information and subsequently bring about a change in teachers' behaviour (Fatmi & Chouari, 2019). However, McConnell et al. (2013) noted that most training programs comprise short workshops that do not change teachers' practices. Such short training may not yield a favourable outcome (Duran et al., 2011). Therefore, effective training should provide enough time for teachers to acquire the necessary knowledge and skills. Furthermore, the training program should comprehensively cover all aspects and concerns about teachers' classrooms (Sutton, 2011). It might be counterproductive if it does not reflect actual classroom practice (Hinson et al., 2006).

Effective training may also provide a practical experience where teachers practice using technology and receive support from the trainers when they encounter problems. In practical, hands-on training, teachers could work together with a facilitator to explore a variety of technological tools, and it could give teachers a chance to learn about the technological tools and the technology curriculum, as well as show how well they could work together to solve problems (Sheffield et al., 2018). Providing teachers with follow-up support could be another aspect of effective training, as they may encounter difficulties when incorporating technology into their classroom practices. Avci et al. (2020) noted that such support was a crucial part of effective training, suggesting that qualified PD organising team members should follow up with teachers during classroom applications to address technical and instructional issues.

### **Professional learning communities (PLCs)**

PLCs can be described as a collective of teachers who prioritise collaborative learning through the exchange of experiences and critical reflection. The term "PLCs" represents the integration of two traditionally separate concepts, namely professional learning and community (Mullen, 2009), in order to emphasise social, collaborative, and contextual learning in teachers' daily classroom activities (Feldman, 2020) and receive guidance from instructional leaders (Stoll & Louis, 2007). In contrast to the conventional workshop model, PLCs employ pedagogical strategies that prioritise active involvement of teachers in their PD (Paulus et al., 2020). All members in PLCs collaborate throughout the entire school, not just in groups based on subjects, phases, or responsibilities (Bolam et al., 2007). In this sense, the members of PLCs may comprise a diverse range of participants, including teachers, school administrators, and other individuals with roles in facilitating student learning.

PLCs are extensively utilised in advanced educational systems (Krasniqi, 2022) and have been recognised as highly effective strategies for enhancing teachers' PD (McConnell et al., 2013; Owen, 2015). PLCs play a crucial role in effective technology integration,

helping people feel more confident in their abilities through professional learning (Barton & Dexter, 2020). The practice of co-teaching, a key principle of PLCs, was an effective way of collaborative work-embedded professional learning (Antinluoma et al., 2021). In addition, teachers may encounter a multitude of obstacles when attempting to incorporate technology into their teaching practices, but PLCs have the potential to assist teachers in surmounting these barriers (Thoma et al., 2017).

Effective PLCs could encompass various related aspects. To name a few, teachers must receive enhanced support, sufficient time for sharing and discussing instructional technology in PLCs, and leadership support from school leaders or administrators. Existing research (Thoma et al., 2017) has suggested that teachers need a facilitator and sufficient time to learn together to help them integrate technology into their classrooms. Leadership is another significant aspect that could determine effective PLCs. Principals or school administrators assume a pivotal role in the facilitation of effective PLCs within their educational institutions (Binkhorst et al., 2015; Chen, 2023; Reynolds, 2016). A leader who is deemed reliable and dependable is necessary to provide support to teachers as they navigate through both challenges and successes collectively (Reynolds, 2016).

Similarly, based on the previous studies, Chen (2023) suggested five characteristics of effective PLCs: (1) *Shared values and goals* require all members, regardless of their hierarchical positions, to actively participate in sharing common goals and values; (2) *Supportive and shared leadership* necessitates all individuals, including teachers and administrators, to get involved in the decision-making processes; (3) *Sharing personal practice* involves sharing personal classroom practices and giving feedback among members for the improvement of the community; (4) For *collective learning and application*, teachers work together to identify teaching challenges and deal with students' learning needs; (5) *Supportive conditions* are supportive environments such as time, place, and other external support. However, Chen (2023) admitted that some other characteristics also contribute to effective PLCs.

## **Methods**

### **Research design**

We employed a case study research design. According to Creswell and Creswell (2018), case studies are a design of investigation found in various fields, especially evaluation, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one or more individuals. Thus, the current study fits this research design, as it aims to explore EFL teachers' perceptions of the training program and PLCs and the roles of these two PD modes in technology integration. That is, EFL teachers were allowed to share their real experiences with training and PLCs within their schools.

### **Research sites and participants**

Two schools implementing the NGS program were selected in this study. All EFL teachers (N=15) were invited to be interviewed about the training and PLCs that they

have experienced and the role of training and PLCs in technology integration (Table 1). One ICT team leader who played a role in training teachers to use technology was invited to be interviewed concerning the training and PLCs that the schools provided to the teachers.

Table 1: Participants' demographic information (N=15)

Participant pseudonym	Gender	Education degree level	Teaching experience with NGS
Teacher A	Male	Masters	1 year
Teacher B	Female	Masters	2 years
Teacher C	Female	Masters	5 years
Teacher D	Female	Masters	4 years
Teacher E	Male	Masters	4 years
Teacher F	Female	Bachelor	2 years
Teacher G	Female	Masters	5 years
Teacher H	Female	Masters	4 years
Teacher I	Female	Bachelor	3 years
Teacher J	Male	Bachelor	2 years
Teacher K	Female	Bachelor	3 years
Teacher L	Male	Masters	4 years
Teacher M	Female	Masters	1 year
Teacher N	Female	Bachelor	2 years
Teacher O	Male	Masters	3 years

### **Research instruments and relevant documents**

A semi-structured interview in English (see Appendix A) and relevant documents were adopted to collect the data. A face-to-face interview was employed to collect the data from all EFL teachers (N=15) and one ICT team leader regarding the training that the schools have provided to EFL teachers. The teacher interviews lasted about 35 minutes, and the ICT team leader interview lasted about 20 minutes. According to Creswell and Creswell (2018), in the interview, the researcher can record information using several methods such as handwritten notes, audio, or video recording. In this study, both handwritten notes and audio recordings were utilised to make sure that no data from the interview was missed. Finally, relevant PD and PLC documents, both printed and electronic, were reviewed.

### **Data management and analysis**

Coding was adopted to analyse the data from interview questions. Creswell and Creswell (2018) stated that the researcher might use computer software to assist in coding because manual coding is more time-consuming, even for the data from a few respondents. Since the participants in this study comprised fifteen EFL teachers and one IT team leader, manual coding would take time. Therefore, the computer software MAXQDA was utilised to store the data and assist in coding. Content analysis was employed to analyse the relevant documents regarding training and PLCs the teachers received. Then the emerging themes were reported along with some excerpts from participants' responses.

## Reliability and validity

According to Guest et al. (2012), when doing qualitative research, validity is more important than reliability because qualitative studies rarely seek to replicate their results, and if the data-gathering procedure is unstructured, the same results cannot be expected across individuals or time. Guest et al. (2012) added that even semi-structured interviews that ask participants identical open-ended questions in the same order include inductive probing. To ensure the validity of this study, we employed feedback, member checking, and triangulation. Concerning feedback, we invited four different experts experienced in qualitative research to review the interview items to assess how well they addressed the research questions. After being reviewed, the data from our interviews was sent back to each participant to check and approve. Apropos of the triangulation method, Merriam and Tisdell (2015) suggested that the researcher justify the data obtained from the interviews through observation on-site or reviews of relevant documents. Merriam and Tisdell (2015) also stated that triangulation could be utilised to ensure both validity and reliability.

## Ethical regulation

The researchers received a letter of approval for data collection from MoEYS (the Ministry of Education, Youth and Sports), Kingdom of Cambodia, and took it to request data collection at the schools selected. The researchers then appointed each participant to describe the purpose of the study. Participation in the study was voluntary, so each participant was asked to sign a consent form for data collection, and they were informed that they could opt out at any time they wished to. In addition, to ensure the confidentiality of the participants, pseudonyms (Teacher A, Teacher B, etc.) were used to report the findings.

## Findings

### 1. What types of training and PLCs have EFL teachers received within their schools?

All EFL teachers reported that their respective schools offered both pre-service training and in-service training. For instance, when inquired about the school's support in helping them integrate technology, Teacher B responded:

The school has provided [the] Foundation Workshop for all new teachers. Teachers have been trained in some [types of] technology such as *Kahoot!*, *Quizizz*, and some others...

Furthermore, their schools also offered them in-service training, as evidenced by the statement provided by Teacher N:

The training such as the *Refresher Workshop* conducted in school helps me a lot because it trains what I have forgotten and I have faced in my teaching...

The ICT team leader also conveyed comparable information regarding the training provided to the teachers:

The school provides all teachers with pre-service training called *Foundation Workshop*. This Workshop is for all new teachers from all subjects including English. The training focuses on the new teaching methods and approaches. The training also includes technology in teaching and learning such as Microsoft *Word & Excel*, *PowerPoint* presentations, and digital tools for assessment.

He also reported that the Foundation Workshop typically lasted 10 to 12 days and focused on technology integration for the last two days:

It [the Foundation Workshop] usually lasts 10 to 12 days and for the last two days, the training usually focuses on technology. For the other days, the training focuses on new teaching methods and approaches...

He added that some ELF teachers also received in-service training.

In-service training is provided to EFL teachers. For example, *Xreading* is for the teachers who are responsible for leading students who are interested in joining this program...

Regarding PLCs, all teachers agreed that they participated in PLCs every week. For instance:

We participate in PLCs every week and we could share our experiences and the use of technology as well... (Teacher F)

Likewise, the ICT team leader also said:

Besides the training that the school and the program provide to the teachers, the school requires teachers to organise weekly PLCs. Teachers can share and learn from each other about using technology in teaching and learning...

In addition to engaging in PLCs within the English subject area, EFL teachers also indicated their involvement in PLCs that encompassed teachers from various disciplines. For instance, Teacher O said:

We share our experience in PLCs, and in weekly school meetings, the teachers from other subjects also share their experiences...

The results from teachers and ICT team leader interviews accord with the results from the document reviews. The data from document reviews also revealed that the main training for all teachers was the *Foundation Workshop* (the pre-service training) and it lasted 12 days. As embedded in its agenda, this training focuses more on teaching methods and approaches. The training also included technologies such as *Kahoot! Quizizz*, *Google Form*, and *Google Classroom*. Interestingly, the training included an introduction to PLC implementation. Regarding in-service training, only one document about the *Refresher Workshop* was found. This workshop included some types of technology, namely *Blooket*, *Nearpod*, *Canva*, *Padlet*, *Mentimeter*, and *Picker Wheel*. Relevant document reviews also indicated that EFL teachers participated in regular PLC meetings. Although the weekly PLC meeting agenda indicated that EFL teachers mostly discussed school administrative work, they also included technology as a topic in their PLC meetings.



## 2. What are the EFL teachers' perceptions of the role of the training in technology integration into their EFL classrooms?

While all EFL teachers acknowledged the provision of training by their respective schools to enhance their technological skills, most of them expressed dissatisfaction with the adequacy of the training. This dissatisfaction stemmed from various reasons, such as too much subject focus, lack of various types of technology, and insufficient time provision for technology training.

Four teachers reported that the training did not specifically focus on the types of technology for EFL classrooms, as seen in Teacher E's response:

The training from the school about technology use is quite limited. If I want to use technology in my class, I need to learn or explore the training by myself. The school doesn't often provide training to teachers of English subjects....

Additionally, they mentioned that the training program failed to offer a diverse range of technological resources, as seen for example in Teacher G's response:

The training provided by the school also helped me learn some types of technology such as *Kaboot!*, and *Quizizz*. But we need to learn many other technologies for our English classes.

Furthermore, some teachers indicated that the allocated time for technology integration in the training was insufficient, as Teacher A indicated:

I think the time for training teachers about technology in [the] Foundation Workshop is not enough. If I don't have some background knowledge of technology, I think it is hard [me] to use it in my class...

## 3. What are EFL teachers' suggestions for effective training that enhances technology integration in their classrooms?

Five common themes, namely subject focus, hands-on experience, new technology, follow-up technical support, and sufficient time for technology training were found from the data coding of the interview transcripts.

### *Subject focus*

When asked about the effective training that would help them integrate technology into their teaching, seven teachers perceived effective training as being more specific to the EFL classroom. In the case of Teacher B, she accepted that effective training should meet the teachers' needs regarding the subject taught.

I think some of the training seems to be more general. It is not specific to English subjects, so it is not useful for integrating it into teaching English...

*Hands-on experience*

Six teachers acknowledged that effective training should allow teachers to practise integrating the technology they have been trained with and the trainees could assist when teachers needed it. For instance, Teacher N shared the following idea:

Effective training would be the one that allows the teachers to practise and [get] help when teachers face problems. This could encourage teachers to integrate what they have learned from the training.

*New technology*

At least six EFL teachers also suggested that effective training should provide them with knowledge of new technology that they have never known before. For instance, Teacher L said:

I think effective training provides me with something new that I have never known before.... The Foundation Workshop provided by the school to all new teachers is useful for some teachers who are not familiar with some basic technologies. For me, it is not important as I have already known those basic technologies, such as *Microsoft Word* and *Excel*, *PowerPoint*, *Kahoot!*, and *Quizizz*....

*Follow-up technical support*

Four teachers have also indicated that for effective training, the trainee should be provided with follow-up technical support even if the training has finished. This is due to the possibility that the trainee may encounter some difficulties while incorporating technology into their actual classroom. Concerning this suggestion, Teacher E discussed his experiences after attending one training provided by the US Embassy:

The trainer should follow up with the trainee if they have faced any problems. I would say the training called Open Program provided by the US Embassy is effective. The program ended, but they have a group for teachers to ask regarding what they have been trained [in]...

*Sufficient time*

At least three teachers suggested that effective training should allocate enough time for the trainees to learn the particular technology. They postulated that without sufficient time in training to learn the technology, they would not acquire sufficient knowledge. For instance, Teacher D shared this:

I also used to attend the training and I was interested in some apps from the training, but because the training was short, I didn't have enough time to ask the trainers. I haven't used those apps till now...

#### **4. What are the EFL teachers' perceptions of the role of the PLCs in technology integration into their classrooms?**

Most EFL teachers acknowledged that PLCs played a significant role in helping them learn technology integration. They accepted that PLCs could allow them to learn and share new technology with other EFL teachers:

I have learned more from PLCs because each teacher [in] the English subject usually shares the new technologies such as games and platforms, they have learned from the training and their experience using that technology in their class. Before, I didn't know how to use *Kahoot!*, *Quizizz*, and *Zoom*. Now, I can use these kinds of technologies well in my classes. (Teacher F)

In addition, they could learn the technology, which is specifically applicable to English classes, as seen in what Teacher M said:

In PLCs, we can share some technologies that are important for our English classes...

They also confirmed that PLCs helped them a lot, as each member was in the same context. For instance, Teacher B said:

Yes, I think PLCs help [me] a lot in using technology. In PLCs, we seem to know what each member needs, and we can help [each other] because we are all [in] the same subject...

However, Teacher D postulated that PLCs just helped each member recall what they had received from the training:

For PLC, it just helps fulfil what we have already learned from the formal training...

### **5. What are EFL teachers' suggestions for effective PLCs that enhance technology integration in their classrooms?**

When asked to share the effective PLCs that would help them a lot in integrating technology into their EFL classes, they acknowledged that their school's PLCs were somewhat effective in terms of having the chance to learn new technology applicable to EFL classes and being able to help each other with technology integration issues, as they are from the same subject area. However, most of them suggested that effective PLCs should encompass two other related aspects.

#### *Allocated time*

Nine teachers suggested that for effective PLCs, there should be increased time to facilitate the exchange and deliberation of technology integration within their English classrooms. For instance, Teacher O said:

In PLCs [in our schools], we can learn from each other regarding technology use, but there is not enough time to discuss the technology [integration] because we normally have other agent tasks assigned by the school to discuss. So, I think for effective PLCs, we should have enough time for discussing and sharing technology in teaching and learning.

#### *Active involvement*

They also suggested that for effective PLCs, all teachers should be actively involved in sharing their personal experiences in learning and using technology and providing others with practical experience using technology and assistance when needed:

For effective PLCs, all members should try to share the technology they have learned from the training and let each teacher practice to help them integrate that technology effectively into their teaching. (Teacher A)

## **Discussion**

EFL teachers received both pre-service and in-service training. The training could help them learn some types of technology, and they participated in weekly PLCs in which they could learn more and share some knowledge and experience in using technology. This finding corresponds to the existing literature. In NGSs, all teachers receive PD, which comes in several modes, including training (pre-service and in-service training) and PLCs (Donaher & Wu, 2020). EFL teachers reported that they have participated in PLCs with other teachers from different subjects, and they could also learn about technology through whole-school PLCs. This finding is congruent with the existing literature. In PLCs, people work together all over the school, not just in subject-or-position-based groups (Bolam et al., 2007).

Yet, EFL teachers contented that the training offered by their schools only partially equipped them with certain technological skills. They also proposed that effective training for technology integration should encompass several facets. It should prioritise subject-specific content (the English subject), provide sufficient time for technology training, offer hands-on experience, include training on various types of new technologies, and provide ongoing technical support. Technology integration would be more successful if people were properly trained (Kukul, 2023). According to Sutton (2011), an effective training program should encompass all facets related to teachers' classrooms. A lack of alignment with real-world classroom practices may result in a counter-productive outcome (Hinson et al., 2006). Therefore, our study suggests that training program coordinators should consider EFL teachers' classroom-related issues when designing future training programs. In addition, getting EFL teachers involved in designing training programs may address classroom issues. Regarding hands-on experience, Sheffield et al. (2018) noted that hands-on training, which provides an opportunity for teachers to collaboratively engage with a facilitator in the exploration of diverse technology tools, could enable teachers to acquire knowledge and skills in using technological tools.

Some EFL teachers reported that the training did not include various types of new technology. Fatmi and Chouari (2019) postulated that PD programs aimed to share new knowledge and, as a result, change teachers' practices. Hence, the present study posits that pre-evaluation is recommended to ascertain any specific technological requirements before the implementation of training initiatives. Furthermore, EFL teachers also conveyed that the allocated time for learning technology in the training was insufficient. Most PD programs come in the form of short workshops that do not change practices (McConnell et al., 2013). Therefore, such short training may not lead to good results (Duran et al., 2011). Moreover, follow-up technical support could be another aspect of effective training, as suggested by EFL teachers and other researchers (Avci et al., 2020).

EFL teachers acknowledged the potential benefits of PLCs within their schools in helping them learn and share technology integration. This finding aligns with the extant literature, which has demonstrated that PLCs were effective approaches for enhancing teachers' PD (McConnell et al., 2013; Owen, 2015). However, most teachers indicated that they had limited opportunities to engage in discussions and exchange ideas regarding technology integration in PLCs due to additional administrative responsibilities assigned by their respective schools. Accordingly, they requested that for more effective PLCs, they should receive more time to share and discuss technology integration. McConnell et al. (2013) noted that, alongside other barriers, a scarcity of allocated meeting time for collaborative discussions could hinder the successful implementation of PLCs. The previous study by Thoma et al. (2017) also suggested that giving teachers adequate time to learn together could help them integrate technology into their classes. In addition, school administrators or leaders play a crucial role in facilitating effective PLCs in their schools (Binkhorst et al., 2015; Chen, 2023; Reynolds, 2016). The collective group of teachers in PLCs needs guidance from instructional leaders (Stoll & Louis, 2007). Therefore, our study suggests that school principals could facilitate effective PLCs in accordance with the recommendations made by EFL teachers. In addition, EFL teachers suggested that effective PLCs need more active involvement from each member in sharing their personal experiences and offering practical experience and assistance to others. Corresponding to this finding, one of the characteristics of effective PLCs suggested by Chen (2023) concerned *sharing personal practice*.

## Conclusions and implications

EFL teachers underwent both pre-service and in-service training, but most of them reported that the training failed to adequately meet their needs, for various reasons including limited emphasis on specific subjects, inadequate provision of various types of technology, and insufficient time allocated for learning technology during the training. They suggested that effective training for the incorporation of technology should encompass several aspects, including offering hands-on experience, equipping them with various types of new technology, providing ongoing technical support, and allowing ample time for them to develop their expertise in the targeted technology.

Additionally, our study also revealed that EFL teachers regularly engaged in weekly PLCs in which they could learn and share their knowledge and expertise in technology integration. Concerning the roles of PLCs in technology integration, most teachers agreed that PLCs at their schools played a big role in helping them learn and share various technologies that they can use in their English classes. However, they reported that their ability to actively participate in PLC discussions and share insights on technology integration was constrained by additional administrative duties imposed by their respective schools. They proposed that for effective PLCs, there should be more time allocated for discussing and sharing the technology and facilitating active involvement of all members in sharing their personal experiences in learning and using technology and assisting one another.

Our study offers insights into improving prospective training programs to equip EFL teachers with knowledge and skills in using technology in their classrooms. Additionally, our findings can provide guiding principles for the development of more effective PLCs. This could also enhance effective training, as teachers would expand their expertise in integrating technology gained from training and consequently foster improved integration of technology into their instructional practices.

### Future work

The current study suggests some topics for future investigation. We acknowledge that our study does not represent all teachers teaching in the same schools, as it had EFL teachers as the main participants. The topic may be revisited in subsequent studies with participants from a diverse range of disciplines. Future research endeavours could also involve conducting an experimental study to investigate the current findings further and utilise them to enhance a guiding framework for implementing training interventions.

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## Appendix A: Semi-structured interview questions

### Teacher interview

#### Background questions

1. How long have you been involved in teaching the English language? How about working with NGS?

2. What kinds of technology do you usually use?

*Focus questions*

3. How do you learn to use technology in your English classes?
4. How do you receive support from your schools in integrating technology into your English classes?
5. What can you say about the opportunities you have to attend or participate in trainings and professional learning communities regarding the use of technology?
6. What kind of training and professional learning communities do you think would help you a lot in integrating technology?

### ICT team leader interview

*Background interview questions*

1. How long have you been involved in your career?
2. What are your opinions toward the use of technology as an important role in education?

*Focus interview questions*

3. What kinds of support did the school provide to the EFL teachers to help them integrate technology into their teaching?
4. How often did the schools provide technology training to the EFL teachers?
5. Besides training, how did the school help the teachers to learn the use of technology among their colleagues?

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