Promoting pre-service English teachers' technological awareness in ELT: narratives from a border area of Indonesia

Lita Liviani Taopan^{1*}, Renol Aprico Siregar²

¹ English Department, Faculty of Teacher Training and Education, Universitas Tribuana Kalabahi, Nusa Tenggara Timur, Indonesia

² English Department, Faculty of Teacher Training and Education, Universitas Sebelas Maret, Surakarta, Indonesia

* Email: litalivianitaopan@gmail.com (corresponding author)

Article history: Received: 11 May 2021

Available online: 26 September 2021

Accepted: 14 September 2021

Published regularly: September 2021

Abstract

The need for preparing quality teachers with all essential technological competencies is considered crucial. The present study aims to analyze and reveal how a design activity could raise the technology awareness of pre-service English teachers for language teaching. Taking a case in a border area of Indonesia, this study was qualitatively conducted as a narrative inquiry research model. Data were collected through participatory observation, in-depth interview, and written narrative from a lecturer's journal. Fifteen pre-service English teachers of a university located in East Nusa Tenggara Indonesia were involved in the study. However, only six participants were interviewed to elicit detailed stories about how the activities in ELT media class could promote their technological awareness. Furthermore, thematic analysis with multiple case studies was applied to analyze the data. The results reveal that the pre-service English teachers develop their awareness of the prominence of technology by experiencing the use of technology provided by their lecturer. Furthermore, peer collaboration is essential during the process of developing technological awareness. The findings provide insights for educators and researchers focusing on the technology integration for teaching and learning in remote areas. Further researches highlighting the evaluation of technology integration is needed regarding remote areas.

Keywords: border area; English language teaching; pre-service English teacher; technological awareness

To cite this article: Taopan, L. L., & Siregar, R. A. (2021). Promoting pre-service English teachers' technological awareness in ELT: narratives from a border area of Indonesia. *Journal on English as a Foreign Language*, 11(2), 400-421. <https://doi.org/10.23971/jefl.v11i2.2866>

To link to this article: <https://doi.org/10.23971/jefl.v11i2.2866>

Copyright © 2021 THE AUTHOR(S). This article is distributed under a *Creative Commons Attribution-ShareAlike 4.0 International* license.

Introduction

In general, the focus of education is to obtain sufficient knowledge for people to stimulate their skills and to make a career path. Computer education is vital in universities. In this modern era, it is hardly possible for young people to be employable if they have fewer exposures to technology (Mcgowan et al., 2015). Additionally, Siregar et al. (2020) asserted that 21st-century education should concisely furnish students with mandatory skills that they can work with to become successful in the globalized world. As a result, it is critical to raise awareness about the importance of technology in everyday life as early as possible. Without a doubt, technological awareness is essential for a teacher, particularly a pre-service teacher in today's world. In this regard, understanding the significance of technology will allow for the development of confidence.

The term awareness approximately refers to being aware and conscious; being cognizant, informed, and alert. It can be defined as a state or ability to perceive, feel, or be conscious of events, objects, or sensory patterns is also referred as awareness (Gafoor, 2012). There have been known three major initiators of teacher's awareness development; resources, experience, and beliefs (Borg, 2003; Bransford et al., 1999; Phipps & Borg, 2009). For instance, as a direct learning process, teacher awareness development can occur through the direct input of knowledge from resources such as textbooks, workshops, formal in-service education, degree programs and graduate programs on teaching. Furthermore, another path of teacher's awareness development is through teachers' experience. In addition to those formal teaching experiences, teachers also learn from informal experiences such as community activities and extracurricular school activities in which teachers share knowledge with other teachers.

Regarding technology integration for educational purpose, teacher's technological awareness refers to teachers being aware of issues such as appropriate use of new technology to facilitate diverse students' learning (Ferreira et al., 2014; Farrell, 2013). About this, Reinhardt et al. (2012) proposed five different aspects of awareness, and technological aspect of awareness is one of which. The technological aspect of awareness is integrally linked with tools and techniques used to complete tasks. Technology awareness, as a skill, refers to being aware of the technology that has recently become widely known and widely accepted in all aspects of life. It also includes being able to recognize and comprehend the utility of any such technology.

While pre-service English teachers in Indonesia's border area, particularly in a university located in Alor, East Nusa Tenggara, Indonesia, went through a standard learning process in primary school. As a result, they are unaware of the presence of technology. They are also unable to use technology because they are not given the necessary encouragement.

Pursuing this further, assisting future educators to be aware of integrating technology in teaching can be an ideal opportunity for teacher educators since teaching through the use of technology has gained massive attention in this era. Furthermore, a step from teachers' awareness of technology for educational purposes, skills such as problem-solving, capacity building, and other pertinent educational issues cannot be overstated. Teachers must cultivate the proper attitude toward technology as a tool for teaching and learning to be able to deal with these functions of electronic technologies (Johnson et al., 2016). In other words, teachers' awareness development is influenced by teachers' beliefs (Andrews, 2007; Borg, 2009) which further shape teachers' instructional decisions (Phipps & Borg, 2009). In terms of language teaching, since teachers play the main role to guide the learners in being successful language users, their beliefs regarding technology should theoretically and practically be revisited to raise their awareness of utilizing technology (Johnson et al., 2016; Mohsenishad et al., 2020).

Generally, ELT scholars have acknowledged technology-enhanced language instruction since it has been shown to provide meaningful learning experiences for language learners (Chapelle, 2001; Corbeil & Valdes-corbeil, 2007; Mohsenishad et al., 2020). Teaching language skills through emerging technologies is well established in second-and foreign-language studies (Liu & Chen, 2014; Mohsenishad et al., 2020). While teachers consider technology integration in the language classroom is beneficial for both teachers and learners in terms of increasing communication learning (Mittal, 2015; Oommen, 2012) several institutions still face serious hindrances in transforming what

technology promises to become a priority for learning. In the Indonesian context, most of these challenges are related to infrastructure and technical expenses or issues, such as lack of access to technology or poor connectivity (Fitriyadi, 2013). However, nowadays, it is easy to solve the technical barriers (Taopan et al., 2019).

In the literacy classroom, progressive educators consider technology to have a greater role; they believe that technology has the potential to motivate learners (Obidike et al., 2010). However, negative attitudes towards technology developed by faculties have also been found to lead to a reduced rate of pre-service teachers' attitudes (Campbell & Young, 1996; Ferry et al., 1996; Hawkrigde, 1983; Morgil et al., 2005; Slough & McGrew-Zoubi, 1996; Zarotsky & Jaresko, 2000). Therefore, the construction of technological awareness is pertinent and should be supported by the authorities.

Many educational institutions, for example high schools in Iowa, since decades ago have been attempting to assign technology curriculum in learning (Manternach-Wigans, 1999). In general, the major objective of these courses is on developing and enhancing the confidence and attitudes of students to digital resources in teaching and learning (Falloon, 2020; Foulger et al., 2017). However, in Japan, at the tertiary level, EFL learning environments are much less structural. Most higher education institutions are more concerned with trying to embed learner-centered, communicative approaches, and technological innovations into their practice (Bailey, 2004). Furthermore, Colpitts et al., (2020) suggested that educators should progressively establish educational technologies in higher education classes. In this regard, pre-service teachers should be provided with extensive experience of utilizing technology for educational purpose during their study in a university. The exposures towards technology will allow the pre-service teachers to be of no obstructions in integrating technology in their future classes.

Pursuing this further, there are two ways of how technology can motivate or involve learners as Stockwell and Hubbard (2013) indicated in their comprehensive view of motivation and technology. First, learners are motivated by an authentic focus on technology that seeks to promote language learning through computers and other electronic devices. Second, language learners will invest in technology to improve the process of learning. In addition to this, Li (2015) proposed six benefits of technology integration in the EFL classroom. First, technology such as the internet and digital media resource offers high-quality, genuine cultural, and language teaching material. Second, technology can function to enable language knowledge to be acquired and language skills to be developed, for example through an excellent

understanding of language forms. Third, technology is a tool that moderates learning and empowers concepts for learners (King, 2017). Fourth, technology offers students greater possibilities for interacting, a key building of socio-cultural learning perspectives that attaches considerable importance to the role of interaction in learning. Fifth, it is possible for devices to be used as a 'tutor' for providing instant feedback. Finally, perhaps the most recognized benefit is that technology increases motivation for students and increases participation (Godzicki et al., 2013).

Technological knowledge plays a crucial role as part of the Technological, Pedagogical and Content Knowledge (TPACK) framework. TPACK refers to the knowledge and competencies that teachers should have concerning the use of technology (Nantshev et al., 2020). Koehler and Mishra (2009) defined the required bodies of knowledge constituting the basis of TPACK framework for an effective technology integration into teaching and learning process. The bodies encompass technological knowledge, content knowledge, and pedagogical knowledge. Further, the interaction between the three core bodies is the essence of TPACK. Also, TPACK is well-known as a framework that focuses on balancing all elements of learning with technology as its focus. This framework postulates that to effectively integrate ICT into education, it is irrevocable for teachers to understand the interaction and the interrelation between technology, pedagogy and content to construct a form of knowledge beyond these three separate knowledge bases (Harris et al., 2009). Moreover, the framework involves a complex understanding of relationships among students, teachers, content, technologies, and practices (Koehler & Mishra, 2009; Mishra & Koehler, 2006; Schmidt et al., 2009).

While most studies (Ahmad, 2012; Colpitts et al., 2020; Davies & West, 2014; Ghavifekr & Rosdy, 2015; Johnson et al., 2016) related to the technology in teaching provide insight into the implementation of technology in the classroom, the present study seeks to demonstrate the extent to which pre-service English teachers in border areas are aware and build their awareness of the importance of technology. This awareness is built through creative and technology-based activities. Therefore, this study aims to explore and reveal the experience of the pre-service English teachers in the border area of Indonesia trying to develop and build the awareness of technology in teaching. The research problems are as follows:

- (1) How do pre-service English teachers express and develop awareness about emerging technology?
- (2) How do the peers and lecturer's TPACK support the process of developing technological awareness in the ELT classroom?

This research is expected to provide information as well as tell the story of the pre-service English teacher related to their technological awareness. The findings of this study are expected to provide input and information about the state of education in Indonesia's border areas.

Method

Research design

This qualitative study is conducted as a narrative inquiry (Barkhuizen et al., 2014). Narrative inquiry has become a legitimate means of research in all areas of social research (Barkhuizen et al., 2014; Pavlenko, 2002), and in the ELT field particularly, it has been embraced to understand language education from the perspective of those who do the teaching and learning. Also, narrative inquiry design is well suited to highlight the complex issues and prerequisites of human experience in teaching and learning (Mertova & Webster, 2007). To sum up, listening to participants' stories regarding their experience of practice can contribute to our understanding how they construct the emerging knowledge. In this study, we engaged with the pre-service teachers' stories about their experience in developing their technological awareness.

Participants

Initially, the informants in this study were 15 pre-service English teachers of the undergraduate English education program at a university in Alor, East Nusa Tenggara, one of the border areas of Indonesia. All participants in this study were chosen based on the following criteria: first, they have used or are currently employing technology-based learning. Second, they have the same educational background and are from the relatively similar region. Third, prospective English teachers must affirm their readiness to participate in this research through the consent form. In this study the names of participants were displayed using pseudonyms and numbers as markers.

However, during the process of data collection and observation, we chose only six students to proceed to the in-depth interview stage. We decided to choose only six students because we assumed that they were able to represent the whole participants. Furthermore, they managed to properly narrate their experiences in class and complete the design assignments by the end of the semester. They all have nearly the same educational background in a border

area. Integration of technology in their schools began only after they had graduated and began their education at university, so they had almost no experience learning with technology. Since they were divided into groups of two, it means that there were only three groups in this study. The purpose of dividing the students into groups was to develop their collaborative skills and to allow them to encourage and support each other. The names of participants are displayed using pseudonyms and numbers as markers. The demographic information about the participants is shown in Table 1.

Table 1. Demographic information of the participants

No	Sex	N	Age range	Previous school location	
				City	Village
1	Male	5	19 - 24	1	4
2	Female	10	20 - 24	3	7

Data collection

The narrative inquiry research method in this study encompasses the researchers narrating the participants' life stories (Nugent, 2007). The data of the study were obtained by conducting in-depth interviews to explore in depth a respondent's point of view, experiences, feelings, and perspectives (Boyce & Neale, 2006), carrying out classroom observation, and the lecturer's journal. The daily journals of lecturer about implementing TPACK and the learning process were used to strengthen the assumptions about the pre-service English teachers' development of technology awareness. However, in this study, the interview data is considered the most recommended data collection method (Creswell, 2012). The following are examples of the interview protocol: first, do you think that English learning media courses are important to be taught in English education study programs? Explain your opinion. Second, can you use technology from the simplest one to the most complicated one? Explain briefly.

In this study, the interviews were conducted by using the participants' first language to assist them in furnishing appropriate details pertinent to the focused data. Also, the interviews were set informally to obtain quality data from informants. The interviews were divided into three stages. We completed the first stage at the beginning of the semester to determine the extent of their background understanding and knowledge of technology in learning, particularly in learning English. In the second stage, we did the observation when the learning process was in progress. Then, the third interview was

conducted when the evaluation of learning outcomes had been carried out, and the students had made a presentation as the final step. Concerning to the interview protocol, we started with greetings as an opening, an explanation of the interview's purpose, an explanation of the research problem, core questions, and follow-up questions. At last, all of the interview processes were digitally recorded for the data transcription. The transcriptions were sent back to the participants to clarify whether or not what has been transcribed is appropriate to what the participants meant during the interview. So-called member checking, such a step was conducted to pursue the trustworthiness of the study.

Afterward, participatory observations were conducted to collect data to clarify the interview data. The classroom observation was conducted to see how actual practice of the pre-service English teachers in engaging the use of technology during the completion of their assignment. As stated by Yin (2009), an observation can provide factual evidence about supplementary information about the topic which is being examined. Concerning the observation, the researcher conducted it by recording every single detail of the activity in the classroom, taking field notes and checking the observation sheet. The writer was being a nonparticipant observer who visited the class and recorded notes without being involved in the activities of the participants

Furthermore, the lecturer's journal was taken into account as a source of data in this study. The reflection of the teacher elaborated on the journal is considered essential to understanding the evaluation of English teaching. Every teacher's reflection results may differ. Disu (2017) asserted that teacher reflection is essential for reflecting on what teachers do during the teaching and learning process. Things that occur in the classroom can be both positive and negative for teachers. Accordingly, teachers must emphasize the positive aspects while anticipating and resolving the negative aspects. As a result, the reflection will be in a form of evaluation for teachers, particularly in terms of improving their ability to teach and learn (Syafryadin et al., 2021).

Data analysis

Thematic analysis was employed to examine the overall data. Barkhuizen et al. (2014) proposed a thematic analysis model that considers both single and multiple case studies. The researchers used a multiple case study to analyze the data from the participants for this study. Furthermore, there are three main activities in thematic analysis: first, reading the data repetitively. After collecting the data, we need to sort out the data to choose appropriate data to

answer the research question. Second, coding and classifying data extracts. Generating coding in general begins with finding the meaning code/label then grouped into categories that are used as the basis for determining the theme and in the end will produce a theory. In coding qualitative research, the meanings obtained from interviews can have various meanings. The meaning can be taken through the results of the direct interview text or the results of the interpretation of the meaning contained in the interview, and finally, after the coding were generated, we addressed the thematic headings.

Findings

This section depicts the encountered findings prolonged on the adjustment that is closely relevant to the focus of the study. Based on the overall narrative data of the study, the details are interpreted in the following themes; 1) pre-service teachers develop awareness about technology, and 2) lecturer's TPACK and peer feedback support the development of technological awareness.

Pre-service teachers develop the technological awareness through poster design activity

The findings indicated that most of the respondents have developed their technological knowledge as they have experienced the use of technology during their learning process especially in designing a poster. They contended that an effective technology-enhanced learning occurs when both teachers and students have a sufficient understanding of technology. However, based on the interview data, we discovered that almost ninety percent of the pre-service English teachers in this study were not technologically savvy. As said by Student 1:

At the beginning of the semester, I was worried because my lecture directed us to use mobile application for designing a poster as the final project. For me, my only difficulty lies in technology. Designing my poster is new for me.
(Student 1)

Student 1 implied that there was a great concern at the beginning of the lesson due to a lack of technological knowledge. Problems emerged when they were required to use mobile application technology to design posters. In addition, during the observations, this concern actually occurs in almost all students in the class. They feel less confident about how to use the mobile application.

Surprisingly, there were found two students who are slightly ahead of their peers. They have been familiar with at least one or two learning applications for teaching and learning. For example, Students 5 and 6 reported that:

I'm familiar with several learning apps such as Edmodo, google classroom, but I've never used them. My brother is a teacher, and he is learning how to use the application. That's why I know about the apps. (Student 5)

I'm familiar with some simple applications such as Google Classroom, Ted Ed, and online learning platforms such as Zoom and Google Meet. I've used Zoom and Google Classroom several times, but I'm not sure how to configure these applications. (Student 6)

The two students are being slightly exposed to technology. They are at least somewhat aware about learning applications. Despite the fact that they were incompetent at using it, they were triggered to try to make use of the apps. Such an issue is considered as a good signal. It was assumed that these two students could indeed create a supportive environment for their peers and inspire them to be more engaged in learning and discovering new things about technology.

Peers and the lecturer's TPACK support the process of developing technological awareness in ELT classroom

Technology integration experience

As aforementioned, in this study, the lecturer seeks to design an activity to raise the students' awareness of technology for teaching English. The activity was designing a poster presentation. The content of the poster should include any kind of teaching media that can be used to teach English. The poster should describe the media; how to use the media, the target student, disadvantages, and advantages of the teaching media. In designing the poster, we instructed the students to choose their own partner because we believe that the peer work should have a good bonding (Canevello & Crocker, 2010; Double et al., 2020).

The results of the study demonstrated how the pre-service English teachers examined the processes and activities. In this regard, almost all students agreed that the lecturer had given them clear instructions on how to design and use the design application. However, some students admitted that even though the lecturer's instructions are very clear, they still encounter difficulties due to their lack of technological knowledge.

At first, it was complicated for me. However, after being taught repeatedly, I was able to design the poster properly. (Student 1)

The instructions given by the lecturer were clear enough for me. However, due to my inadequacy in using the application, I found it difficult to design a poster. However, my friend is better than me at using the app so we can end up designing a good poster. (Student 2)

The instructions given were quite clear because the lecturer also provided examples and she told us the best application for designing a poster. (Student 3)

Furthermore, the respondents shared positive attitudes towards lecturer's introduction toward the use of mobile application as some of them could not afford to buy more sophisticated gadget. They felt happy as they could use their mobile phone to help improving their teaching media. Also, they acknowledged that the lecturer's clear instructions and extensive knowledge of the tool assisted them to engage the technology more effectively.

Peer feedback to support the awareness development

Another step of the project was designing a poster containing English Language Teaching Media. The project had to be done in groups of two to three respondents. The respondents were allowed choose their own partners from among their friends. The freedom of choosing their own group was to consider not only the background of technological mastery, but also the aspect of emotional bonding between friends. It is assumed that the closer the relationship is, the easier the learning process will be. Also, it is closely related to self-assurance and trust in one another. The impact of such activity is depicted in the following excerpts.

In my group we work together, my job was to present the poster in the exhibition, and my friend will answer the question from the audience. For the design, we have tried our best and we always make the decision together. Overall, we were a solid team. (Student 1)

Unfortunately, not all friends were cooperative during the project making. In the beginning, they made up various reasons to avoid the group discussion. As the leader, I tried to distributed responsibility based on their capability. Later I discovered that my friends actually worried about working with the technology. Finally, my lecturer succeeds to convince them that technology is not something to be afraid of. (Student 2)

We work together as a group. I prepared the contents then; we designed the poster together. When presenting the poster, we did it in turn. (Student 3)

The findings indicated the overall the group project was quite successful. Despite the fact that some groups had members who were not actively engaged, all groups managed to complete the poster design and presentation successfully. When they finally managed to present their poster, they take pride in the fact that they have finally been capable of removing all obstacles, particularly related to the use of technology.

All of my group mates were amazing. As a team, we can complement each other. We are fully conscious that our technical knowledge is limited, but we can overcome these limitations by working together when presenting the poster. (Student 4)

Our group did not divide the tasks in any particular way. However, we collaborate and assist one another. (Student 5)

Moreover, their success in presentations clearly shows that they have also succeeded in organizing teamwork, allowing them to complete this project as a group. In this regard, some groups managed to do a solid collaboration during the group project. They believed that their peer's feedback and complement have significantly affected their motivation in completing their project although some restrictions and limitations emerged.

Lecturer's TPACK

Regarding the use of the mobile application, the respondents were asked to deliver their perceptions on lecturers' performance in using technology. This part of investigation was pertinent to the use of TPACK framework. In other words, it is essential to know how much students trust and value the lecturer's performance in implementing the TPACK framework which covered technology, pedagogy, and content knowledge. This is necessary to be investigated because if students are doubtful about the ability of the teacher or lecturer, raising the essential awareness will be difficult.

The results indicate that most of the pre-service English teachers positively perceived that lecturer's capability of integrating technology during the teaching and learning process is vital to help improving their motivation as well as their learning effectiveness. The respondents felt more engaged and motivated as they witnessed their lecturer showing a good capacity in integrating various technological tools to help them understand about the

learning materials. Such an experience drives the respondents curious about what sort of technological tool the lecturer is going to use in the next meeting. Furthermore, Student 1 asserted that the lecturer of the ELT media course is considered knowledgeable. From the extract, almost all students shared similar thoughts with regard to the lecturer's performance.

However, they came up with different reasons. Student 1 admitted that the lecturer was good at teaching and utilizing a variety of presentation media which piqued her curiosity in every meeting. This is meaningful as the lecturer has shown to have succeeded in capturing enthusiasm which will lead to a strong desire to learn. Also, Student 2 elaborated that the lecturer of this course was able to foster optimism that technology would be somewhat useful in the future when he becomes an English teacher.

After seeing my lecturer's performance in using the technology, I now believe that technology can be useful in my future class. (Student 2)

Also, Students 3, 4, 5, and 6 highlighted how the lecturer integrated technology during the lesson. Student 3 mentioned that the lecturer introduced various apps that can be useful for teaching English. In line with this, Student 4 admitted that the lecturer has shown the way to utilize technology effectively. For Student 5, the lecturer not only introduces the technology but also has created awareness on the importance of media for teaching English. Finally, Student 6 claimed that at the beginning of the lesson, almost all of them had the concept that technology was something complicated. However, when the lecturer introduced them to some apps that are beneficial for teaching English, finally they realized that technology was not as difficult as they had previously assumed.

The lecturer used more than one apps to teach us. I think, it helps us to learn more effectively. (Student 3)

I'm interested in her teaching. She used technology to teach us and to show how easy it is to create a powerful learning media by using technology. (Student 5)

I thought technology is complicated. I never had a chance to learn about it. But after seeing my lecturer, I become motivated that technology can be helpful if used properly. (Student 6)

The excerpts showed that the lecturer's example is crucial in the teaching process especially when integrating technology in the ELT classroom. For pre-service English teachers in the border area, it can be seen that teachers'

preferences about educational technology, as well as pedagogy, in particular, will certainly impact their performance in integrating technology.

Furthermore, the lecturer's daily journal, it was clear that during the process of designing the poster, the lecturer realized that delivering clear instruction is essential before going further through the whole learning process. This would be different if the students were capable of using the technology. The lecturer, on the other hand, not only gave instructions but also provided examples and even directly exemplified how to design down to the most-minute details. The lecturer could not avoid this because if it had not been done properly, this project would have never been completed. For the lecturer, students need a lot of assistance, especially when it comes to technology. Students will depend greatly on lecturers as a source of information.

As reported in previous section, peer support in the group is critical to the success of the project in each group. The task will be easier and more enjoyable when all team members are working together. Furthermore, in relation of attempts to raise technology awareness, the presence of cooperating peers will strengthen and facilitate the process of raising technology awareness.

To sum up, the study found that all of the participants shared positive perceptions towards the integration of technology in the classroom. They perceived that lecturer's capacity regarding the integration of the technological tools as well as peer feedback were fruitful to help them raising awareness of the use of technology for educational purpose. Such a positive view was evaluatively elicited from the respondents' judgment they certainly accorded regarding how technological tools could assist their learning process. Furthermore, they considered that technological tools have been a great help for them to complete their project. They acknowledged that with a crystal-clear instruction from the lecturer they can get the most of the utilized apps. Finally, the pre-service teachers admitted that they finally manage to cope with the challenge of integrating the technology in the learning process while developing a great teamwork at the same time.

Discussion

The objective of the study was to reveal how an activity involving the use of technological tools can raise student teachers' technological awareness for education and how the peers' feedback and the lecturer's TPACK facilitate the process of developing the technological awareness in ELT classroom. In this regard, undoubtedly, the lecturer's readiness of technology integration in

education becomes the most fundamental factor. Based on the findings, the lecturer's capability of integrating the technology to help the teaching and learning process has been profitable in raising students' awareness of technology. However, the success of learning that integrates technology deeply relies on teachers' ability to manage technology in the classroom as well as students' ability to follow the learning process. It is in line with Amutha and Kennedy (2015) asserting that technology is only a tool. It cannot help students to learn effectively unless the teacher can utilize it advantageously.

Despite the significant challenges encountered, furthermore, the lecturer strives to integrate technology into learning. Such kind of determination, undeniably, comes from the lecturer's belief about the advantages of involving the use of technology to enhance the learning process. In other words, teachers' positive belief of technology should be the fundamental reason to lead them use the technology. This is confirmed by Voogt and Roblin (2012) that teachers should be able to see that readiness for integrating technology in teaching is fundamental especially in the 21st-century.

On the other hand, the lecturer believed that the technology integration in learning at the university level can lead the pre-service teachers to a better understanding of how important technology to carry out the teaching learning process effectively. With regard to the benefits of integrating ICT in teaching and learning process, the findings imply that the whole process of the implementation is assuredly dependent on the lecturers' readiness. The readiness of the lecturers is assumed as the lecturers' perceptions or beliefs of their capabilities and skills to integrate the technology into their classroom instructions. It regards the ability to demonstrate an understanding of what technological tools and skills are necessary to the learning process (Carl, 2005). This is line with Inan and Lowther (2010) mentioning that teachers' readiness and competence is the most crucial factors which directly influence the technology integration.

Furthermore, lecturers' technological competence will allow students to experience global access for further educational purposes. In this regard, Johnson et al. (2016) asserted that teachers' cognition plays an important role in determining the role and effectiveness of technology in the classroom. Thus, with the help of the technologically-literate lecturers, students in a remote area who experience disadvantage will have the potential to learn from global perspectives, and this situation will indeed broaden their mindset (Bell & Federman, 2013).

Moreover, as ICT is becoming more ubiquitous due to the rapid rate of development, technologically literate lecturers, therefore, should continue to

learn and improve more knowledge about it. Undoubtedly, their exposures towards the ICT adoption during their study play a pivotal role on their readiness of using ICT. This is consistent with the study conducted by Theng and Chia (2008) that highlights the extent of ICT adoption among teachers in Malaysia. Similarly, Tezci (2009) underlined that teachers' training contributes a significant effect on teachers' ICT skills.

Regarding technological knowledge, Schmidt et al. (2009) suggested that it should be integrated in the learning process. However, an effective technology-enhanced learning occurs when both teachers and students have a sufficient understanding of technology. The study noticed students' anxiety when asked to use mobile apps during the study. This phenomenon is considered as the process of technological growth. In line with this, Hamzah et al. (2020) mentioned that the growth of technology is commonly encountered with a mix of excitement and anxiety. In other words, this is an acceptable issue since these students were the product of the traditional teaching model at the previous level. Thus, it is undeniable that a person's educational background at the previous level influences the learning process at the next level (Ghavifekr & Rosdy, 2015).

At last, students' interaction is often questioned during the integration of technology in the teaching learning process. To cope with such an issue, the lecturer, in this study, divided student teachers into small groups. The use of small groups is considered beneficial to broaden the students' experience and develop their skills (Buxton, 2007). Further, the small groups also helped the students to develop co-constructed knowledge within social interaction (Barlex, 2006). Fortunately, with two students that are familiar with the use of learning application, the lecturer has prepared a scenario in which the two students were plotted to be the supportive environment to inspire their peers to discover more things about technology. Peers or groups that are successful in collaborating among the group members have more experience of teamwork. The most important thing is that prospective teachers can encourage and support each other's limitations in the use of technology (Linton et al., 2014; Lobatón, 2011). This is in accordance with Chang (2015) that peer motivation can significantly affect the attitude of other friends.

Teachers are required to have certain competencies to effectively accomplish their duty. Particularly, the nuance of technological competence is considered prominent in this digital era. Preparing pre-service teachers and raising their awareness to integrate the use of technology is crucial for the betterment of the future education.

Conclusion

This narrative study reveals that the subjects of this study are finally aware that technology support in ELT is crucial. Further, in this study, the activity of designing posters which were done in groups was one of the methods applied by lecturers in helping the pre-service English teachers to develop awareness about the technology. Through the design activity, students not only finally develop their awareness in technology, but also their collaborative skills. During the process of designing, they realized that technology was helpful and make their project easier than before. They are finally able to design posters pertaining to their intentions with the guidance of the lecturers using various types of design applications. They confidently presented the results of their designs in a mini exhibition at the end of the learning process.

The level of technological knowledge of both teacher and student determines what kind of treatment is needed during the process of teaching and learning. The lecturer or instructor should have addressed the student's level of technical knowledge before designing the activities. Peer support is essential in developing technological awareness among the pre-service English teachers in the border area of Indonesia.

The study is limited in narrating how the process of building awareness of technology among student English teacher candidates in the border areas of Indonesia. Further research is needed to measure the implication of the technology awareness that already exists. The findings are expected to enlighten other prospective teachers to reflect, evaluate, or develop themselves regarding the technology integration in their future class.

Acknowledgements

We would like to extend our appreciation and gratitude to all students who participated in this study and generously shared their time, experience, and materials for this research.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Lita Liviani Taopan <https://orcid.org/0000-0002-6081-7165>

Renol Aprico Siregar <https://orcid.org/0000-0002-7108-1296>

References

- Ahmad, J. (2012). English language teaching (ELT) and integration of media technology. *Procedia - Social and Behavioral Sciences*, 47(Balaaco 1996), 924–929. <https://doi.org/10.1016/j.sbspro.2012.06.758>
- Amutha, S., & Kennedy, S. J. (2015). Awareness on technology based education by the student teachers. *International Journal of Scientific and Research Publications*, 5(9), 1–4. <https://doi.org/http://www.ijsrp.org/research-paper-0915.php?rp=P454500>
- Bailey, A. A. (2004). Reforming English teaching in Japanese universities: creating a language community. *Ritsumeikan Journal of Educational Research*, 4, 94–112. <https://doi.org/http://www.ritsumei.ac.jp>
- Barkhuizen, G., Benson, P., & Chik, A. (2014). *Narrative inquiry in language teaching and learning research*. Routledge: Taylor and Francis Group
- Barlex, D. (2006) Pedagogy to promote reflection and understanding in school technology-courses. In Dakers J.R. (eds) *Defining Technological Literacy*. Palgrave Macmillan, New York. <https://doi.org/10.1057/978140398305313>
- Bell, B. S., & Federman, J. E. (2013). E-learning in postsecondary education. *The Future of Children*, 23(1), 165—185. <https://doi.org/10.1353/foc.2013.0007>
- Binod, M. (2015). Innovative ways of English language teaching in rural India through technology. *International Journal of English and Literature*, 6(2), 38–44. <https://doi.org/10.5897/ijel2014.0686>
- Borg, S. (2003). Teacher cognition in language teaching: a review of research on what language teachers think, know, believe, and do. *Language Teaching Research*, 36(1), 81–109. <https://doi.org/10.1017/S0261444803001903>
- Borg, S. (2009). *Introducing language teacher cognition*. Leeds Library. Retrieved from <http://www.education.leeds.ac.uk/research/files/145.pdf>
- Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn: brain, mind, experience, and school*. Washington, D. C.: National Academy Press.
- Buxton, B. (2007). *Sketching user experiences: getting the design right and the right design* (the 1st ed.). San Francisco: Elsevier.
- Campbell, K., & Yong, Z., (1996). Refining knowledge in a virtual community: a case-based collaborative project for pre-service teachers, *Journal of*

- Technology and Teacher Education*, 4(3/4), 263-280. <https://doi.org/10.22318/csc1995.402>
- Canevello, A., & Crocker, J. (2010). Creating good relationships: responsiveness, relationship quality, and interpersonal goals. *Journal of Personality and Social Psychology*, 99(1), 78–106. <https://doi.org/10.1037/a0018186>
- Carl, J. B. (2005). *Factors influencing pre-service teachers' readiness to integrate technology into their instruction*. Published Doctor of Education Dissertation, University of San Francisco, California.
- Chang, C. Y. (2015). The effects of friendship and antipathy networks on adolescent attitude similarity. *International Journal of Adolescence and Youth*, 20(4), 407–428. <https://doi.org/10.1080/02673843.2015.1015038>
- Colpitts, B. D. F., Smith, M. D., & McCurrach, D. P. (2020). Enhancing the digital capacity of EFL programs in the age of COVID-19: the ecological perspective in Japanese higher education. *Interactive Technology and Smart Education*. Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/ITSE-08-2020-0123>
- Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (the 4th ed.). Boston, MA: Pearson.
- Disu, A. (2017). A phenomenological study on reflective teaching practice (Unpublished doctoral dissertation). *Concordia University*. Retrieved from <https://digitalcommons.csp.edu>
- Double, K. S., McGrane, J. A., & Hopfenbeck, T. N. (2020). The impact of peer assessment on academic performance: a meta-analysis of control group studies. *Educational Psychology Review*, 32(2), 481–509. <https://doi.org/10.1007/s10648-019-09510-3>
- Falloon, G. (2020). From digital literacy to digital competence: the teacher digital competency (TDC) framework. *Educational Technology Research and Development*, 68(5), 2449–2472. <https://doi.org/10.1007/s11423-020-09767-4>
- Ferreira, A. F., Salinas, J. G., & Morales, S. (2014). Using a task-based approach for supporting a blended learning model for English as a foreign language. *International Journal of Computer-Assisted Language Learning and Teaching*, 4(1), 44–62. <https://doi.org/10.4018/ijcallt.2014010103>
- Fitriyadi, H. (2013). Integration of information and communication technology in education: potential benefits, knowledge-based society, value education, and implementation strategies. *Jurnal Pendidikan Teknologi Dan Kejuruan*, 21(3) 269-284. <https://doi.org/10.21831/jptk.v21i3.3255>
- Ferry, B., Hedberg, J., & Harper, B. (1996). Investigating ways of supporting teacher use of interactive multimedia. *Journal of Technology and Teacher Education*, 4(3/4), 197-210. Retrieved from <https://eric.ed.gov/?id=EJ541517>

- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*, 1(2), 175–191. <https://doi.org/10.21890/ijres.23596>
- Hamzah, F., Phong, S. Y., Azlan, M., Sharifudin, S., Zain, Z. M., & Rahim, M. (2020). Exploring students' readiness on English language blended learning. *Asian Journal of University Education (AJUE)*, 16(4) 61-170. Retrieved from <https://education.uitm.edu.my/ajue/>
- Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' technological pedagogical content knowledge and learning activity types: curriculum-based technology integration reframed. *Journal of Research on Technology in Education*, 41(4), 393–416. <https://doi.org/10.1080/15391523.2009.10782536>
- Hawkrigde, D. (1983). *New information technology in education*. London: Croom Helm.
- Inan, I. A., & Lowther, D. L. (2009). Factors affecting technology integration in K-12 classrooms: a path model. *Education Tech Research Dev.*, 58(2), 137-154. <http://dx.doi.org/10.1007/s11423-009-9132-y>.
- Ischinger, B. (2009). *Creating Effective Teaching and Learning Environments First Results from TALIS* (B. Ischinger (ed.); 1st ed.). OECD Publishing.
- Johnson, A. M., Jacovina, M. E., Russell, D. G., & Soto, C. M. (2016). Challenges and solutions when using technologies in the classroom. In *Adaptive Educational Technologies for Literacy Instruction*, (pp13–29.) Taylor and Francis. <https://doi.org/10.4324/9781315647500>
- Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary Issues in Technology and Teacher Education*, 9(1), 60–70. <https://doi.org/10.1177/002205741319300303>
- Lau, B., & Sim, C. (2008). Exploring the extent of ICT adoption among secondary school teachers in Malaysia. *International Journal of Computing and ICT Research*, 2(2), 19-36.
- Li, L. (2015). What's the use of technology? insights from EFL classrooms in Chinese secondary schools. In Jenks C.J., Seedhouse P. (eds) *International Perspectives on ELT Classroom Interaction* (pp. 168–187). International Perspectives on English Language Teaching. Palgrave Macmillan, London. https://doi.org/10.1057/9781137340733_10
- Linton, D. L., Farmer, J. K., & Peterson, E. (2014). Is peer interaction necessary for optimal active learning? *CBE Life Sciences Education*, 13(2), 243–252. <https://doi.org/10.1187/cbe.13-10-0201>
- Lobatón, J. C. G. (2011). Peer interaction: a social perspective towards the development of foreign language learning. *Profile*, 13(1), 189–203.

- Mcgowan, P., Cooper, S., Durkin, M., & O'Kane, C. (2015). The influence of social and human capital in developing young women as entrepreneurial business leaders. *Journal of Small Business Management*, 53(3), 645–661. <https://doi.org/10.1111/jsbm.12176>
- Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: a framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. Retrieved from <https://eric.ed.gov/?id=EJ737321>
- Mohsenishad, M., Shirani, S., & Heirati, J. K. (2020). Raising teachers' awareness of technology-enhanced language instruction through teacher education: insights from scaffolded dialogues raising teachers' awareness of technology-enhanced language instruction through teacher education: insights from Sc. *Cogent Education*, 7(1) 14-20 <https://doi.org/10.1080/2331186X.2020.1831686>
- Morgil, I., Yücel, A. S., Seçken, N., & Oskay, O. O. (2005). An analysis of awareness of students in the utilization of technology. *CBLIS conference proceedings 2005 integrating new technologies in science and education, University of Zilina*, 529–540. Retrieved from <http://hdl.handle.net/10797/14648>
- Nantschev, R., Feuerstein, E., González, R. T., Alonso, I. G., Hackl, W. O., Petridis, K., Triantafyllou, E., & Ammenwerth, E. (2020). Teaching approaches and educational technologies in teaching mathematics in higher education. *Education Sciences*, 10(12), 1–12. <https://doi.org/10.3390/educsci10120354>
- Nugent, T. A. (2007). A narrative inquiry of teachers' perceptions regarding their professional development experiences. *Dissertations*. 900. Retrieved from <https://scholarworks.wmich.edu/dissertations/900>
- Obidike, N., Anyikwa, N., & Enemou, J. (2010). Teachers' awareness of the existence and the use of technology to promote children's literacy instruction. *African Journal of Teacher Education*, 1(1), 115–125. <https://doi.org/10.21083/ajote.v1i1.1576>
- Pavlenko, A. (2002). Narrative study: whose story is it, anyway? *TESOL Quarterly*, 36(2), 213–218. <https://doi.org/10.2307/3588332>
- Phipps, S., & Borg, S. (2009). Exploring tensions between teachers' grammar teaching beliefs and practices. *System*, 37(3), 380–390. <https://doi.org/10.1016/j.system.2009.03.002>
- Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK): the development and validation of an assessment instrument for preservice teachers. *Journal of Research on Technology in Education*, 42(2), 123–149.

- <https://doi.org/10.1007/978-1-60761-303-9>
- Siregar, R. A., Fauziati, E., & Marmanto, S. (2020). The effective 21st-century pedagogical competence as perceived by pre-service English teacher. *Pedagogy Journal of English Language Teaching*, 8(1), 1-24. <https://doi.org/10.30762/jeels.v7i1.1548>
- Slough, S., & Zoubi, M. R. (1996). Getting technology reluctant teachers published on the world wideweb, *Journal of Technology and Teacher Education*, 4(3/4), 215-232. <https://dl.acm.org/doi/10.5555/251745.251752>
- Stockwell, G., & Hubbard, P. (2013). Some emerging principles for mobile-assisted language learning. *The International Research Foundation for English Language Education*, 2013, 1–15.
- Syafryadin, Pratiwi, V. U., & Wardhana, D. E. C. (2021). Pre-service English teachers' experience with various call applications: hindrances and reflection. *Studies in English Language and Education*, 8(1), 99–114. <https://doi.org/10.24815/siele.v8i1.17609>
- Taopan, L. L., Drajati, N. A., & Sumardi. (2019). Discovering the teacher's beliefs in TPACK framework for teaching English in high school. *Indonesian Journal of Informatics Education*, 3(1). <https://doi.org/10.20961/ijie.v3i1.34914>
- Thomas, M. (2013). TBLT in business English communication: an approach for evaluating adobe connect and second life in a blended language learning format. *International Journal of Computer-Assisted Language Learning and Teaching*, 3(1), 73–89. <https://doi.org/10.4018/ijcallt.2013010105>
- Tezci, E. (2009). Teachers' effect on ICT use in education: the Turkey sample. *Procedia Social and Behavioral Sciences*, 1(1), 1285-1294. <https://dx.doi.org/10.1016/j.sbspro.2009.01.228>
- Valtonen, T., Leppänen, U., Hyypiä, M., Sointu, E., Smits, A., & Tondeur, J. (2020). Fresh perspectives on TPACK: pre-service teachers' own appraisal of their challenging and confident TPACK areas. *Education and Information Technologies*, 25(4), 2823–2842. <https://doi.org/10.1007/s10639-019-10092-4>
- Voogt, J., & Roblin, N. P. (2012). A comparative analysis of international frameworks for 21st century competences: implications for national curriculum policies. *Journal of Curriculum Studies*, 44, 299–321.
- Webster, L., & Mertova, P. (2007). *Using narrative inquiry as a research method*. Routledge: Taylor & Francis Group. <https://doi.org/10.4324/9780203946268>
- Yin, R. K. (2009). *Case study research* (the 4th ed.). Thousand Oaks, California: Sage publications.
- Zarotsky, V., & Jaresko, G. S. (2000). Technology in education - where do we go from here? *Journal of Pharmacy Practice*, 13(5), 373–381. <https://doi.org/10.1106/KGPB-NN3A-7FPG-Y6JD>