



A Critical Investigation of Technological Pedagogical Content Knowledge (TPACK) of EFL Teachers

¹Balqis Husain*, ¹Fazri Nur Yusuf, ¹Didi Sukyadi

Affiliations:

¹ Universitas Pendidikan Indonesia, Bandung, Indonesia

*Corresponding Author: balqihusain.bh@gmail.com

ABSTRACT

This qualitative study aims to assess the experiences of EFL teachers teaching online regarding TPACK. Four EFL teachers from various school levels were interviewed, observed, and had documents retrieved. The data analysis revealed that EFL teachers from secondary schools were competent in TK, CK, and PK but struggled in TPK, TCK, and TPACK. Despite being competent in TK, they struggled to integrate technology into learning instruction. However, Tertiary EFL teachers were competent in integrating technology into content and learning strategies, which distinguished them from EFL teachers at the secondary school level. The framework for Secondary EFL teachers showed no proportionality between the three core components of TPACK, particularly TK toward PK and CK. In comparison, the framework for tertiary EFL teachers demonstrated that technological, pedagogical, and content knowledge components shared a comparable mastery of competencies.

Keywords

Critical Investigation
Educational Studies
EFL Teachers
TPACK

JETIA

Journal of Educational Technology Innovation
and Applications

Vol. 1, No. 02, pp. 35-48

Article history

Received 4 March 2025

Revised 28 April 2025

Accepted 26 June 2025

Copyright: ©2025 by the authors. Licensee IISTR, Yogyakarta, Indonesia. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-ShareAlike 4.0 International ([CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/)) license.

journal.iistr.org/index.php/JETIA

DOI: 10.56741/jetia.v1i02.1166



Introduction

Nowadays, in the digital era, teachers of English as a foreign language (EFL) must be adaptable and receptive toward the educational transformation for developing their professional

development. Consequently, a qualified EFL teacher must facilitate traditional classroom instruction and integrate ICT learning that is effective, thoughtful, and efficient to obtain meaningful learning. Teachers are mandated to participate in the design and implementation of technology-based instruction [1]. However, in the integration process, two factors must be considered: the link between the utilization of devices and the targeted pedagogical outcomes. Therefore, incorporating technology into classroom instruction is not simple [2]-[4].

The emerging issue is that EFL teachers are quite capable of mastering content and pedagogy but need help incorporating technology into learning instruction. It occurs because the teachers only acknowledge how to utilize technology (technological-oriented model) but appear to need more capacity to blend technological tools with pedagogical knowledge in the classroom activities (pedagogical-oriented model). This argument is supported by an empirical study that reports that teachers' provision of content and pedagogical knowledge is well-established compared to technological knowledge [5]. The other study highlighted the same point that EFL teachers are eager to apply and comprehend pedagogical and topic knowledge rather than technology-related knowledge [6]. Therefore, more than merely introducing technology to EFL instructors is required and cannot guarantee the success of the learning and instruction process. Teachers of EFL must comprehend technology integration into learning to design appropriate didactic.

To integrate ICT into language classroom instruction, EFL instructors must have specific professional knowledge. TPACK is the dimension of knowledge that EFL teachers must possess and expand. Knowledge of TPACK promotes teachers in incorporating ICT into pedagogical practices, such as instruction, assessment, and the design of language teaching materials [7]. Indeed, technology represents new thoughts and knowledge development to the dynamic link between pedagogical, content, and knowledge, so it serves as much more than a teaching instrument [8]. PCK and ICT are inextricably linked; PCK-related ICT is a body of knowledge educators should recognize in teaching ICT. PCK-related ICT includes five self-knowledge component combinations: pedagogical, the field of study, students, environmental context, and ICT [9]. Mishra and Koehler [7] then build on Shulman's proposed classification of teacher knowledge. It considers the role that technological knowledge can play in effective instruction structured by a framework of technological, pedagogical, and content knowledge (TPACK) [7].

Although adequate teacher knowledge of technology contributes significantly to transforming technology into instruction, several earlier studies have identified practical limits. For instance, non-user-friendly technology indicates EFL teachers' diminished performance in the classroom [10]. Aside from that, the teacher's lack of knowledge of software and technical terms in technological knowledge contributes to the list of technological knowledge dilemmas in Turkey [11]. One of the significant barriers to incorporating technology into learning instruction

is a need for more experience and teacher naivety [12]. Indeed, similar studies have reported that most teachers need more technical knowledge to engage in classroom instruction (Wan, 2020). In another study, social and contextual factors hinder the relationship between learning instruction and future technologies. In this context, institutions may not regularly support teachers' efforts to integrate technology into their instruction [13]. Teacher candidates and experienced teachers have different TPACK qualifications. As a result, the interaction of knowledge and skills with teaching experience contributes to the process and learning outcomes [14].

Based on these issues, this study highlights the University and secondary EFL teachers' attempt to integrate ICT into the EFL curriculum. With this view in mind, the research questions of this study are; a) How are the TPACK of the University and secondary EFL teachers described? b) what aspects are most dominantly used by the University and secondary EFL teachers in the TPACK practice?

Methods

A. Participant

The teachers and lecturers who participated in this study were all bachelors of English education and taught in their relevant academic fields. Participants in this study were high school English language teachers and English language education lecturers in English education study programs. The teaching experience of these educators ranged from 4 to 15 years. The data of this study were administered to two members of lecturers in English education study programs at universities and two members of English language education teachers at senior high schools in North Maluku. Furthermore, table 1 provided supplementary information about the participants. Pseudonyms referred to all participating teachers.

Table 1. Supplementary Information of Participant

Teachers	Institutions	Years of teaching experiences	Technology literacy (Limited, developed, sophisticated)
Teacher 1	Public School in Ternate	10	Developed
Teacher 2	Public School in Tidore	4	Developed
Teacher 3	State university in Morotai	7	Developed
Teacher 4	Private university in Ternate	15	Developed

B. Procedure

Multiple case studies were designated in this study to investigate how the TPACK framework can be used to describe experienced teachers merging ICT in EFL Classroom instruction. The instruments used were observation of the learning process in the classroom, documents, and interviews. The observation procedure was used to investigate teachers' intentions to integrate

ICT into EFL instruction at various levels of education. At the same time, the teachers' interviews and documents were used to grasp details about the aspects that EFL teachers most frequently use in their TPACK practice.

The researcher observes each teacher in the classroom for roughly one hour. During the observation process, the researcher took notes on important information. In addition, researchers analyze observation-related records. The main points investigated through observation were the use of ICT in EFL integrating instruction, the learning procedures facilitated by ICT, assessment strategies, technological tools that are reliable with pedagogical content, situations in which ICT tools are not used, and their justifications. The document studied is comprised of English course lesson plans. In the next procedure, the researcher utilizes semi-structured interviews. Separate interviews are performed at separate times. In conducting interviews, the researcher employed the Zoom application. Interviewing each respondent requires thirty minutes. In this investigation, The researcher designed interview questions using the seven domains of the TPACK framework developed by Mishra and Koehler [7] as a starting point. The three fundamental knowledge components of the TPACK framework were PK, TK, and CK. The last four are the product of prior basic knowledge areas overlapping, namely PCK, TCK, TPK, and TPACK. Furthermore, the interview instrument was adapted from Ginting & Linarsih [15], and it is described in Table 2.

Table 2. TPACK items of the interview

Domains	Indicators	Items
TK	Knowledge of using Technological tools	7
	Knowledge of Technological Software and Hardware	7
	Knowledge of technical term	6
PK	Knowledge of EFL classroom Management	4
	Knowledge of EFL course management	5
	Knowledge of EFL Assessment and Evaluation	5
CK	Four language skills knowledge	4
PCK	Knowledge of the EFL Method and technical	4
	Knowledge of EFL Assessment and evaluation	5
	EFL strategy knowledge specific to subjects in different lessons	6
	EFL Students' learning needs knowledge	
TCK	competence in using educational software in instructional designs	4
	Competence in foreign language in using educational software	6
	Competence in merging technology and subject field course	5
TPK	Competence in preparing and applying assessment and evaluation tools	4
	Competence in designing and using material	4
	Competence in classroom management	3
TPACK	Competence in preparing content and relevant tools to implement in the instructional design	3
Total		84

C. Data Analysis

The thematic content analysis approach was created to investigate, analyze, and create the TPACK profile for each of the four educators. The thematic content analysis gathers qualitative

data from observations, interviews, and documents to identify the development of various themes, events, and categories and calculate the size and interconnections of the TPACK elements. In addition, the researcher is interested in investigating the relevance of TPACK taught in higher education institutions and high schools as the second study question; the categories are derived through cross-case analysis.

Results and Discussion

This section provides a detailed overview of TPACK in the learning experiences of secondary and tertiary EFL teachers in North Maluku schools. In light of the scope of each TPACK component, all experiences of implementing TPACK in an EFL classroom environment will be described.

A. EFL teachers' Experiences of implementing TPACK in the EFL Classroom

1. Competence of Technological Knowledge (TK)

When evaluating the experience of EFL teachers in implementing TPACK in class, three sub-dimensions of the TK dimension were measured. The three sub-dimensions were using technological tools, hardware and software knowledge, and technical knowledge. The term indicated that the four EFL teachers from secondary and tertiary schools had no issues using technological tools. Where technology was frequently applied in a social context, technological tools became a part of their lives. Furthermore, with knowledge of hardware and technological terms, they encountered no significant issues in their use since they were EFL teachers who were extensively knowledgeable with English and technical terms used throughout overall English, so there were no significant obstacles with technological terms. However, the four EFL teachers stated that if they need to recognize a technical term, they utilize guidebooks and look up details on YouTube to comprehend the context of the term. Conversely to software expertise, they were typically proficient with Windows and application programs like Microsoft Office. However, they need programming-related experience, such as designing a free web page.

T1: Until now, I have never created a blog spot because all activities related to education at school are typically handled by ICT experts, so we only arrange photos of the activities, which are then uploaded by the ICT staff.

T2: I have never created a blog spot or used it for writing lecture activities.

2. Competence of Pedagogical Knowledge (PK)

Following the viewpoints of EFL teachers in secondary and tertiary schools regarding Pedagogical Knowledge (PK), they were competent in the pedagogy field because they had a degree in education. Due to years of teaching and training experience, even teachers and lecturers with extensive professional experience claim to be qualified in pedagogy. Regardless of the EFL teacher statement, it was noticeable that they not only mastered class management

but were also capable of collaborating on teaching tools and materials based on the situation, conducting professional assessments and evaluations on indicators of attitudes, skills, and knowledge, and fully grasp and implement teaching principles, methods, and technical knowledge based on the situation, conditions, and level of child development. Descriptions of EFL teachers' views regarding PK include:

T2: My reflection includes student and teacher reflections at the end of the class. Student reflections determine the extent to which their understanding relates to the presented material. Through teacher reflections, particularly regarding the methods I use when teaching, I can determine how the implementation of this strategy can promote students' understanding of the material, as well as identify obstacles related to the implementation of this strategy and how to overcome them.

T3: The strategy I use to promote students' critical thinking relates to the subject matter. For instance, they provide current issues to discuss based on age and background.

T1: I assessed the students through three factors, namely attitudes, skills, and knowledge. The attitude aspect is tested through observation, the knowledge aspect is assessed through oral and written tests, and the skills aspect is evaluated through oral and written tests and is based on the four language skills.

3. Competence of Content Knowledge (CK)

In terms of the CK dimension, EFL teachers were proficient in English subjects because they were teacher graduates, had accomplished the Pre-service teachers' program, and had extensive teaching experience in English subjects. However, the difficulties encountered when teaching include students' inability to speak English. Hence, the teacher uses three languages (English, local language, and vernacular languages) to encourage students' comprehension of language acquisition. Aside from that, the most challenging language skill for teachers to master in teaching is writing skill. The teacher's point of view, for example,

T2: I need help conveying material related to productive skills such as writing. As a result, I studied it extensively before delivering the material.

T1: To encourage students' understanding in speaking, I use three languages simultaneously, namely English, the local dialect, and the native languages. I do this because the students I teach are from rural areas, and their English comprehension capacity still needs improvement.

T4: The most difficult material for teaching students is speaking. My workable alternative action was to do exercises in a non-stressful classroom atmosphere.

4. Competence of Pedagogical Content Knowledge (PCK)

In aspects of PCK, both secondary and higher education teachers reported that they were competent in principles, methods, teaching strategies, and assessment and evaluation. Teachers at the tertiary level were confident in determining the optimal strategy for certain subjects. Similarly, secondary school teachers developed collaborative strategies to improve specific English skills, notwithstanding the undertaking of material reinforcement. Before specifying a method or strategy for learning English as a subject, EFL teachers revealed that they conducted a primary diagnostic evaluation in the evaluation. The instructor's views, elaborated below, are as follows:

T4: I teach speech courses and employ collaboration I believe that the combination of problem-based and project-based learning is highly effective in fostering critical thinking through students and minimizing their anxiety about speaking English.

T1: I frequently engage in constructive learning techniques such as collaborative learning, think pair share, problem-based learning, and project-based learning. Nevertheless, I implemented different kinds of constructive learning strategies based on the outcomes of the initial diagnostic evaluation. It is a requirement of the independent curriculum, so I comply with the curriculum procedure. Consequently, the preliminary diagnostic evaluation serves as my guide for determining appropriate learning strategies based on student demands.

T2: I determine learning strategies based on the conditions of the students. If I am required to engage in constructive learning, I will do so; otherwise, I do not. Examples of frequently constructive learning strategies that I used include contextual and collaborative learning.

T3: To support students in comprehending the subject matter, I use authentic materials and realia when teaching the simple past tense. I employ media such as holiday photographs; students are pleased with the media I employ, and they easily comprehend the material I teach

5. Competence of Technological Pedagogical Knowledge (TPK)

In the context of TPK, Google Classroom, and Google Meet were utilized by the education department to assist EFL teachers in secondary schools in the instructional process. For university teachers, learning applications provided by their institutions were beneficial. However, both different levels of EFL teachers frequently utilize the Zoom application for learning. Furthermore, EFL teachers in secondary schools whose use of technology did not significantly enhance the learning process expressed different impressions. According to them, when using technology in the classroom, they returned to the teacher learning center instead of the student learning center. In contrast to what secondary school EFL teachers reported, where applications encouraged students to become independent learners, students in online-based classes felt comfortable asking questions or presenting, according to university teachers. These points of view are as follows:

T1: The Ministry of Education has provided us with Google Meet and Google Classroom. However, I feel stressed during the teaching process because there needs to be more student response during the classroom activities, so learning returns to the teacher-learning center model.

T2: the obstacles I encountered during online learning were that students needed more motivation to study independently and more initiative to check or collect their assignments. When the internet network is not functioning properly, I attach the recording to the application via Zoom, and they do not watch it. Consequently, student awareness of independent learning is still extremely low.

T3: In order to facilitate online learning, the institution provides teachers with an application called OPENSIMKA. I encourage students to deliver group or individual presentations throughout the learning process. I attach the recording if the network is unstable to facilitate student learning. Students are extremely enthusiastic about online education. They exhibited a high level of curiosity, as evidenced by their numerous questions and contributions during presentations. Because questions can be typed in the chat column, students who are typically extremely hesitant in offline classes are more likely to be engaged.

T4: I believe implementing technology-based learning has increased students' awareness of independent learning. Students frequently comprehended the recorded material, and when presenting project-based assignments, they did so with enthusiasm and command of the information they conveyed. When asking and expressing opinions, there is no hesitancy. Consequently, my involvement during the implementation of technology-based learning is limited to the facilitator and controller.

6. Competence of Technological Content Knowledge (TCK)

EFL teachers at secondary schools and universities have different perspectives on using software to incorporate knowledge content from the standpoint of TCK. According to the information provided by two secondary school EFL teachers, they were less competent in integrating technology into learning content. PPT and Canva were the most common media to integrate technology into instructional materials. However, they frequently utilized educational web such as quizzes for quizzes, as well as mid and final terms were organized using Google Forms and Kahoot application. Contrary to what university teachers claim, they tend to utilize various applications based on the content to be delivered. For instance, Flipbooks were employed to increase students' interest in and comprehension of reading texts, while voice threads and YouTube were frequently applied to practice English speaking skills through project-based learning, simple mind, and Coggle typically trained the development of ideas in writing. In addition, the Google Keeps and To-Do-List applications were used to create online notes. Whereas, PPT and Canva were commonly used for presentation. For Quiz, mid, and final tests, University teachers adopted Quiziz and Google Forms applications. The EFL instructor shared the gathered parameters:

K1: When teaching English, I use PowerPoint to distribute teaching materials and the quiz application for quizzes, while Google Forms and Kahoot are used for mid and final-term tests.

K2: I frequently use Canva to create learning content and Quiziz to create visually appealing quizzes; I choose the Google Forms app for mid and final-term tests.

K3: I use a variety of applications depending on the subject matter. However, when I teach reading, I use Flipbook to increase interest in reading and comprehension of the text. Meanwhile, I frequently use YouTube when teaching speaking. For instance, when I assigned project-based tasks such as covering news based on societal issues at the time, students were required to cover the news in English and then upload their work to YouTube. Then, I use Coggle to develop students' ideas in writing. In addition, I utilize PowerPoint for presentations as well as Quiziz and Google Forms to create questions for the mid and final-term tests.

T4: Due to the fact that I only teach speaking and writing courses, I utilize the Voice thread application to help students practice their speaking skills. I adopt the simple mind application to hone my students' writing skills. In addition, I utilize multiple applications, including to-do lists and Google Keeps, for online notes. I typically employ Google Forms for the mid and final-term tests.

7. Competence of Technological, Pedagogical, Content Knowledge (TPACK)

According to the TPACK-related information obtained from the four English teachers, there were conflicting views on applying TPACK in the English classroom. Secondary school EFL instructors mostly used PowerPoint and Canva, as well as the educational web provided by the Ministry of Education. Meanwhile, English teachers at universities chose various educational websites and strategies to encourage student engagement in learning, even though the institution-provided educational web. Some educators argue as described below:

T1: I have never used an application for idea development; I employ manual mind mapping exclusively. I generally maximize the use of applications provided by the education ministry.

T2: Even though the university has sponsored online-based learning by facilitating educational websites for teachers, particularly EFL teachers, I am eager to use free educational websites that were not created by the campus. It aims to encourage student participation in English learning. I even collaborated on the educational web with problem-based learning and project-based learning strategies.

B. Components are most dominantly used by the tertiary and secondary EFL teachers in the TPACK practice

This section concentrates on the distinctions between the TPACK components used by EFL teachers in secondary and tertiary schools. The TPACK framework illustrates these differences proportion of each element. The TPACK framework is illustrated in Fig. 1 for greater clarity.

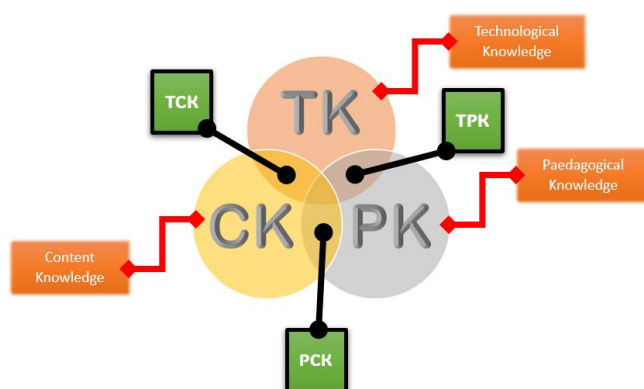


Fig. 1. Secondary or University EFL teacher's Framework

Based on the framework mentioned earlier for EFL teachers, it was noticeable that there was no proportionality between the three core components of TPACK, particularly TK toward PK and CK. The TK element was smaller than the other elements, so it influenced the components of TPK and TCK. Observations of the extent to which TPACK was implemented during the EFL learning process had shown that, even though EFL teachers were quite proficient in technology, they needed more understanding in integrating technology into teaching material content and teaching strategies. EFL teachers demonstrate a high pedagogical and content knowledge level, but their knowledge of learning technology and technology integration is relatively low.

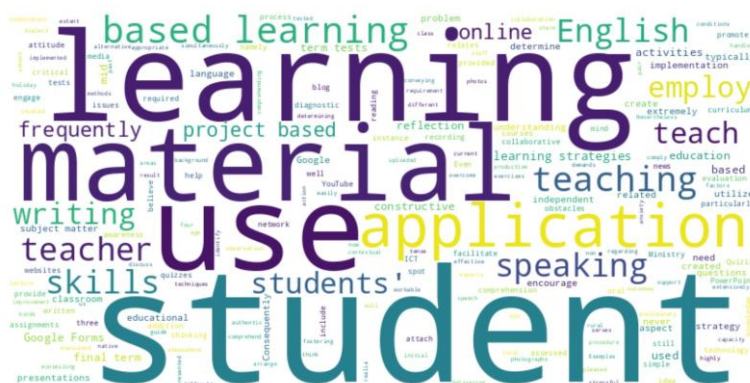


Fig. 2. Word Cloud-based on the interview results

Fig. 2 was generated from the interview transcript reflects various aspects of teaching, including instructional strategies, technology use, and challenges in the learning process. From the TPACK perspective, the meaning of this image can be interpreted as follows:

Technological Knowledge (TK)

- Words such as Google Meet, Google Classroom, Quizizz, Kahoot, YouTube, Flipbook, Voice Thread, Coggle, and Canva highlight the role of technology in supporting education.
- Teachers have integrated various applications to enhance teaching effectiveness, such as using Google Forms for assessments or YouTube for project-based assignments.

Pedagogical Knowledge (PK)

- Terms like collaborative learning, project-based learning, problem-based learning, think-pair-share, and diagnostic evaluation indicate the diverse pedagogical approaches used by educators.
- Teachers are not only employing traditional teaching methods but also implementing constructivist strategies to enhance students' understanding and encourage critical thinking.

Content Knowledge (CK)

- The focus on specific subjects is evident in words like speaking, writing, reading, past tense.
- Educators apply content-appropriate strategies, such as using realia and authentic materials to teach the simple past tense or leveraging Voice Thread to enhance speaking skills.

TPACK Integration

- This word cloud illustrates how teachers integrate technology with various pedagogical strategies to deliver subject content more effectively.
- However, challenges such as lack of student engagement, low motivation, and internet connectivity issues suggest that TPACK implementation still needs optimization in certain educational contexts.

Precise results are revealed through the lens of the framework for tertiary EFL teachers, particularly university-level EFL teachers. The framework demonstrates that technological, pedagogical, and content knowledge components share a comparable mastery of competencies. University-level EFL instructors demonstrate mastery of knowledge technology and the ability to integrate technology into learning strategy and content.

This study investigates the experiences of EFL teachers at various school levels and their practical use of TPACK in the school setting. Based on the Technological Knowledge indicator, it is known that EFL teachers of various teaching levels can easily grasp technical terms on

electronic devices, have a sufficient understanding of how to operate advanced technologies, and even have an awareness of hardware functions and utilization. This may be because they are accustomed to electronic devices and technology playing a vital role in all aspects of people's lives [16],[17]. However, EFL teachers have limited software knowledge, particularly programming-related knowledge such as designing free web pages. It is consistent with previous research findings indicating that technology-related teacher competence is missing [18]. At the time of the spread of COVID-19, even the majority of educators around the globe are becoming familiar with technology and using it in the classroom, so teachers are not prepared for change [19]. Following this view, Technological Knowledge (TK) understanding contributes to teachers' ability to integrate technology into instructional practice.

In contrast to CK, PK, and PCK, the teacher has greater competence in managing classes, conducting evaluations, utilizing instructional media, and applying principles, methods, and pedagogical techniques, as well as compiling and developing instructional materials. Several studies emphasize that teachers have advantages in the pedagogical component and are aware of these advantages [20],[21]. Even teachers with vast teaching experience and a long track record in education are highly competent in effective classroom management, the creation and implementation of instructional materials, the readiness of evaluation instruments, and the application of pedagogical principles. Classroom management is the primary factor influencing significant learning outcomes [22]. The importance of readiness for pedagogical elements is comparable to that of readiness for technological elements in learning [23].

Regarding TPK competence, the response of EFL teachers from university schools is overwhelmingly positive, as students seem to be more engaged during the online learning process than in traditional classrooms. During online learning, EFL teachers in secondary schools reveal diverse perspectives. The primary problem is students' inability to be disciplined in coursework and lack of awareness for independent learning; even during the class learning process, it seems to go to teachers' learning centers due to a lack of student-students and student-teacher response. A parallel point was made by Yüce [24], who emphasized that teachers struggle with classroom management when confronted with online learning. Time, discipline, and interaction issues in the classroom arise in the online learning process because teachers are required to engage in intensive learning without relevant experience [11].

Concerning TCK and TPACK components, university-level EFL teachers demonstrated readiness to integrate electronic devices according to the subject matter being taught. Learning strategies compatible with electronic devices and instructional materials are a major consideration. Teachers with extensive knowledge of ICT are the greatest asset, not only for updating CK but also for accommodating students with varying background knowledge [14]. In

contrast to EFL teachers in secondary schools, they struggle when teaching is integrated with technology, particularly when the three components (content, pedagogy, and technology) are integrated into a single unit. The inability to implement TPACK in the classroom ultimately causes online classes to become monotonous and unsatisfying. Integrating TPK, TCK, and TK components into teaching planning and strategies is a serious obstacle to teachers' implementation of technology in learning [25]. Teachers need help fitting subject matter from various subjects using electronic tools in virtual classrooms [11].

Existing studies support the current study's conclusion that TPK, TCK, and TPACK components are still challenging to integrate and implement. The Kindergarten teachers are quite competent in their use of technology. However, their understanding is limited to operating or preferring to technologically oriented model, and they have yet to reach an understanding of the pedagogically oriented model. Thus, they face obstacles when integrating with content and pedagogy. Therefore, teachers must keep expanding themselves in all aspects. Educators who continue to train themselves to maximize technology motivate them to engage in higher-order thinking, self-directed learning, and experiential learning [26].

There are also limitations to this investigation. The number of participants in this study was extremely limited. In addition, the researchers did not distribute questionnaires to EFL teachers in North Maluku to increase the research's credibility and avoid bias. Distribute questionnaires to determine the factors that hinder EFL teachers from implementing TPACK in learning English.

Conclusion

When educators are required to conduct online learning by integrating the core components of pedagogy, content, and technology, it is revealed that secondary school EFL teachers still need to gain an understanding of how to utilize technology for pedagogical purposes, unlike EFL teachers at the university level, who have adequate knowledge of integrating pedagogy, content, and technology in learning instruction, EFL teachers at the secondary level lack this knowledge. Therefore, EFL teachers at the secondary school level require extensive assistance with developing technology-based instruction. In addition, educational institutions that prepare competent teachers should promote the appropriate incorporation of technology into classes to raise significant awareness regarding the comprehensive training of EFL teachers.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

- [1] H. Tai, M. Pan, and B. Lee, "Applying the Technological Pedagogical And Content Knowledge (TPACK) model to develop an online English writing course for nursing students," *Nurse Education Today*, vol. 35, no. 6, pp. 782–788, 2015. doi: 10.1016/j.nedt.2015.02.016.
- [2] N. A. Draijati, L. Tan, S. Haryati, D. Rochsantiningsih, and H. Zainnuri, "Investigating English language teachers in developing TPACK and multimodal literacy," *Indonesian Journal of Applied Linguistics*, vol. 7, no. 3, pp. 575–582, 2018. doi: 10.17509/ijal.v7i3.9806.
- [3] J. H. L. Koh, C. S. Chai, B. Wong, and H.-Y. Hong, "Design thinking and 21st-century skills," in *Design Thinking for Education: Conceptions and Applications in Teaching and Learning*, J. H. L. Koh, C. S. Chai, B. Wong, and H.-Y. Hong, Eds. Springer, 2015, pp. 33–46.
- [4] C. Mouza, "Promoting urban teachers' understanding of technology, content, and pedagogy in the context of case development," *Journal of Research on Technology in Education*, vol. 44, no. 1, pp. 1–29, 2011. doi: 10.1080/15391523.2011.10782577.
- [5] R. R. Villa, S. M. Andrés, and P. Q. Medrano, "Primary teachers' technological, pedagogical, and content knowledge," *Comunicar. Media Education Research Journal*, vol. 23, no. 2, 2015.
- [6] S. A. Surayya, M. Asrobi, and Z. Farizi, "Scrutiny on Indonesian EFL teachers' willingness to understand and implement the TPACK in VLE," *Journal of Education Technology*, vol. 5, no. 4, pp. 645–653, 2021.
- [7] P. Mishra and M. Koehler, "Technological pedagogical content knowledge: A framework for teacher knowledge," *Teachers College Record*, vol. 108, pp. 1017–1054, 2006.
- [8] M. J. Koehler and P. Mishra, "What Happens When Teachers Design Educational Technology? The Development of Technological Pedagogical Content Knowledge," *Journal of Educational Computing Research*, vol. 32, no. 2, pp. 131–152, 2005. doi: 10.2190/OEW7-01WB-BKHL-QDYV.
- [9] C. Angeli and N. Valanides, "Preservice elementary teachers as information and communication technology designers: An instructional systems design model based on an expanded view of pedagogical content knowledge," *Journal of Computer Assisted Learning*, vol. 21, no. 4, pp. 292–302, 2005. doi: 10.1111/j.1365-2729.2005.00135.x.
- [10] M. Zhang and X. Fang, "Exploring University EFL Teachers' Technological Pedagogical Content Knowledge and Teacher Efficacy in Technology-integrated Flipped Classroom," *SAGE Open*, vol. 12, no. 3, 2022. doi: 10.1177/21582440221116105.
- [11] M. H. Sarı and H. Keser, "Classroom teachers' online teaching experiences during the COVID-19 pandemic: The perspective of technological pedagogical content knowledge," *Journal of Pedagogical Research*, vol. 5, no. 4, pp. 251–269, 2021.
- [12] S.-J. Jang and M.-F. Tsai, "Exploring the TPACK of Taiwanese elementary mathematics and science teachers concerning the use of interactive whiteboards," *Computers & Education*, vol. 59, no. 2, pp. 327–338, 2012. doi: 10.1016/j.compedu.2012.02.003.
- [13] M. J. Koehler, P. Mishra, K. Kereluik, T. S. Shin, and C. R. Graham, "The Technological Pedagogical Content Knowledge Framework," in *Handbook of Research on Educational Communications and Technology*, J. M. Spector, M. D. Merrill, J. Elen, and M. J. Bishop, Eds. Springer New York, 2014, pp. 101–111. doi: 10.1007/978-1-4614-3185-5_9.
- [14] Y.-F. Yeh, Y.-S. Hsu, H.-K. Wu, F.-K. Hwang, and T.-C. Lin, "Developing and validating technological pedagogical content knowledge-practical (TPACK-practical) through the Delphi survey technique," *British Journal of Educational Technology*, vol. 45, no. 4, pp. 707–722, 2014.
- [15] D. Ginting and A. Linarsih, "Teacher professional development in the perspective of technology pedagogical content knowledge theoretical framework," *Jurnal Visi Ilmu Pendidikan*, vol. 14, no. 1, pp. 1–10, 2022.
- [16] A. Kuyumcu Vardar and F. Acar, "Quick assessment techniques used in learning learning-teaching process," *Turkish Studies*, vol. 13, no. 11, pp. 879–898, 2018.
- [17] M. H. Sarı and S. Akbaba Altun, "Qualitative research on classroom teachers' technology use in mathematics teaching," *International Journal of Eurasia Social Sciences*, vol. 6, no. 19, pp. 24–49, 2015.
- [18] S. Demir, M. F. Ozmantar, E. Bingolbali, and A. Bozkurt, "An investigation of elementary teachers' use of technology," presented at the *5th International Computer & Instructional Technologies Symposium*, Elâzığ, Turkey, 2011.
- [19] D. Sykes, "Online education during a pandemic: Teaching and learning in home spaces," *Literacies & Language Education: Research & Practice: Teaching During a Pandemic*, vol. 1, no. 1, pp. 86–88, 2020.

- [20] P. Mutanga, J. Nezandonyi, and C. Bhukuvhani, "Enhancing engineering education through technological pedagogical and content knowledge (TPACK): A case study," *International Journal of Education & Development Using Information & Communication Technology (IJEDICT)*, vol. 14, no. 3, pp. 38–49, 2018.
- [21] D. Roussinos and A. Jimoyiannis, "Examining primary education teachers' perceptions of TPACK and the related educational context factors," *Journal of Research on Technology in Education*, vol. 51, no. 4, pp. 377–397, 2019. doi: 10.1080/15391523.2019.1666323.
- [22] M. Wang, G. Haertel, and H. Walberg, "Toward a knowledge base for school learning," *Review of Educational Research*, vol. 63, no. 3, pp. 249–294, 1993.
- [23] Y. Li, V. Garza, A. Keicher, and V. Popov, "Predicting high school teacher use of technology: Pedagogical beliefs, technological beliefs and attitudes, and teacher training," *Technology, Knowledge and Learning*, vol. 24, pp. 501–518, 2019. doi: 10.1007/s10758-018-9355-2.
- [24] E. Yüce, "Possible problems in online foreign language teaching in a university context," *International Journal of Curriculum and Instruction*, vol. 11, no. 2, pp. 75–86, 2019.
- [25] K. F. Hew and T. Brush, "Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research," *Education Tech Research Development*, vol. 55, no. 3, pp. 223–252, 2007.
- [26] S. Kurt, "Educational technology: An overview." [Online]. Available: <https://educationaltechnology.net/educational-technology-an-overview/>

Authors



Balqis Husain   is a lecturer at Universitas Pasifik Morotai, Indonesia, and a doctoral student in the English Language Education program at Universitas Pendidikan Indonesia. With a strong background in language teaching and educational research, she is dedicated to exploring innovative approaches to English language instruction, particularly in the integration of technology in education. Her research focuses on the application of digital tools in language learning, examining both their potential benefits and the challenges educators face in implementing technology effectively. (email: balqishusain.bh@gmail.com).



Dr. Fazri Nur Yusuf, M.Pd.   is an expert in English as a Foreign Language (EFL) at Universitas Pendidikan Indonesia with a strong academic background and teaching experience in EFL teaching methodology, reading, writing, and lesson planning. He earned his Bachelor's degree from IKIP Bandung, completed his Master's degree at Universitas Pendidikan Indonesia, and received his Doctoral degree from Universitas Negeri Malang. Dr. Yusuf is actively engaged in research and academic development in the field of English language education, particularly focusing on improving pedagogical strategies and literacy skills for EFL learners. His work reflects a commitment to advancing language teaching practices in diverse educational contexts. (email: fazrinuryusuf@upi.edu).



Prof. Dr. Didi Sukyadi, M.A.   is a distinguished professor and researcher with expertise in Applied Linguistics and Semiotics at Universitas Pendidikan Indonesia and the Rector for the 2025–2030 term. He obtained his Bachelor's degree from IKIP Bandung, pursued his Master's degree at the University of London, and earned his Doctoral degree from Universitas Indonesia. With a deep commitment to advancing language education and linguistic research, Prof. Sukyadi has contributed significantly to the development of language theory and its applications in education and communication. His academic work encompasses critical inquiries into the structure and meaning of language, fostering interdisciplinary insights in linguistics, education, and semiotics. (email: dsukyadi@upi.edu).