Pegem Journal of Education and Instruction, Vol. 14, No. 1 , 2024 (pp. 205-217)

RESEARCH ARTICLE WWW.PEGEGOG.NET

TPACK Praxis in EFL Reading Classroom: A Case of Technology-Infused Teaching from Indonesia

Sri Haryati[1*], Issy Yuliasri[2], Joko Nurkamto[3], Sri Wuli Fitriati[4]

[1,2,4]Faculty of Language Education, Universitas Negeri Semarang, Kelud Utara III Street Number 15, Petompon, Gajahmungkur, Semarang Regency, Central Java 50237, Indonesia and Faculty of Teacher Training and Education, Universitas Sebelas Maret, Ir. Sutami Avenue Number 36, Kentingan, Jebres, Surakarta, Central Java 57126, Indonesia

[3]Faculty of Teacher Training and Education, Universitas Sebelas Maret, Ir. Sutami Avenue Number 36, Kentingan, Jebres, Surakarta, Central Java 57126, Indonesia,

Abstract

Praxis (ethical, self-aware, responsive and accountable action) is necessary because English teaching is ethical professions that demand teachers to constantly make morally complex decisions in their outside-of-class preparation and in-class interactions. This case study investigates how teachers determined the praxis of the TPACK framework in EFL reading instruction. Three exemplary English teachers from three different high schools in Indonesia were recruited as participants in this study. Classroom observation, in-depth interviews and artifact analysis were employed to gather the data on teachers' TPACK praxis and their underlying considerations. The results reveal that the TPACK framework was implemented effectively in reading class as teachers demonstrated their technological, pedagogical and content knowledge. Teachers successfully managed technology-rich learning in the reading classroom supported by the appropriate teaching strategies and the adoption/adaptation of learning content. Some considerations on teachers' TPACK praxis were pinned on understanding the rationality of the actions related to the importance of self-emotional learning, students' diversity and personal development, as well as the practicality of the technology. The finding of the study implies that teachers at more advanced levels present themselves as content creators rather than technology users in technology-infused teaching.

Keywords: Praxis, reading, technology integration, TPACK

Introduction

The demand for educational technology has been gradually increasing because e-learning is massive and rapidly growing in the globalization era (R. Huang et al., 2019; Ugur, 2020). Technology has become mandatory in education, including language learning in Indonesia. Further, teachers must acquire technological knowledge and apply it to create effective teaching and learning processes (Zulkharnain & Mohd, 2017). As a response to this change, Technological Pedagogical and Content Knowledge (TPACK) framework is a potential solution for teachers to teach students efficiently.

TPACK, theoretically, is described as a conceptual framework that highlights the interconnection among teachers' understanding of content, pedagogy, and technology interacting with one another to achieve effective teaching (Koehler et al., 2013). The integration of TPACK gives teachers the information they need to consider how crucial technological knowledge is to providing effective instruction (Koehler et al., 2014). The TPACK framework has significantly impacted educational technology theory and practice since its inception in 2006. It has significantly contributed to teacher education and professional development (Koehler et al., 2012; Moreno et al., 2019; Voogt & Mckenney, 2016). However, despite the importance of TPACK, not all teachers were well prepared to implement it in their classes (Jin & Schmidt-crawford, 2022). Some teachers struggle with how to use technology effectively in their classes (Voogt & Mckenney, 2016).

TPACK has grown in popularity over time, and research on it has portrayed several issues associated with using technology in the classroom. Hwee et al. (2014) reveal that the teachers' beliefs influenced TPACK's implementation and the presence of educational technologists. Furthermore, contextual factors such as classroom facilitation and the concern of students' prior knowledge affected how teachers operationalize TPACK in their classes have been investigated (Tseng et al., 2018). Other studies on TPACK in different subjects have also been conducted over the years, such as in nurse education (Tai et al., 2015), history (Vaerenewyck et al., 2017), social study (Gómez, 2015), special education (K. Huang et al., 2020) and mathematics education (Smith et al., 2016).Among the studies related to TPACK, one exciting

Corresponding Author e-mail: haryatisriuns87@gmail.com

https://orcid.org/0000-0003-2628-2280

How to cite this article: Sri Haryati S , Yuliasri I, Nurkamto J, Fitriati SW (2024). TPACK Praxis in EFL Reading Classroom: A Case of Technology-Infused Teaching from Indonesia. Pegem Journal of Education and Instruction, Vol. 14, No. 1, 2024, 205-217

Source of support: Nil

Conflict of interest: None.

DOI: 10.47 750/pegegog.14.01.213

Received: 22.12.2022

Accepted: 28.02.2023 **Publication:** 01.01.2024

study reveals that most pre-service and in-service professional development programs for teachers frequently fall short of supporting and fostering the development of teachers' identities as adept users of cutting-edge technology (Koehler et al., 2014). Therefore, the failure needs to be evaluated from various aspects, mainly in TPACK praxis and the underlying reasons. Investigating teachers' TPACK praxis is urged since there has been an utter lack of a review of TPACK research that focuses on language teachers' knowledge of technology-based language instruction (Tseng et al., 2020). Praxis entails the morally informed and committed action of the individual practitioner who engages in the education practice, which aids in shaping social formations and conditions for human collectives. Two fundamental goals of praxis research match the meanings of the word praxis: to direct educational praxis's growth and guide education's growth (Kemmis, 2012).

Among the studies related to TPACK, one exciting study reveals that most pre-service and in-service professional development programs for teachers frequently fall short of supporting and fostering the development of teachers' identities as adept users of cutting-edge technology (Koehler et al., 2014). Therefore, the failure needs to be evaluated from various aspects, mainly in TPACK praxis and the underlying reasons. Investigating teachers' TPACK praxis is urged since there has been an utter lack of a review of TPACK research that focuses on language teachers' knowledge of technology-based language instruction (Tseng et al., 2020). Praxis entails the morally informed and committed action of the individual practitioner who engages in the education practice, which aids in shaping social formations and conditions for human collectives. Two fundamental goals of praxis research match the meanings of the word praxis: to direct educational praxis's growth and guide education's growth (Kemmis, 2012).

The conceptualization and recent attempts to explore teachers' TPACK framework in their EFL reading praxis are supposed to give new insight into language teaching. Moreover, despite the importance of reading for high school students (Harmey, 2021; Knospe et al., 2021), how the TPACK framework is applied in reading classes remains unexplored. This current study investigated the TPACK praxis committed in the Indonesian EFL reading classrooms and the aspect behind its decision-making. Two research questions are formulated in this current study: (1) How is the classroom praxis of that TPACK framework broadly integrated into EFL reading class? (2) What aspects influence solid and value-laden moral decisions in determining teachers' TPACK praxis in reading class?

Revisiting TPACK Framework

TPACK was first developed by Shulman (1986) as a particular form of pedagogical content knowledge (PCK). It integrates content and pedagogy into understanding how particular topics, problems, or situations are organized, represented, and tailored to learners' interests and skills and presented for instruction. This framework is designed to achieve effective teaching supported by technology, content, and pedagogy (Gómez, 2015; Shulman, 1986; Koehler, Mishra, Kereluik, Shin, and Graham in Spector et al., 2014). TPACK framework has three main dimensions: technological knowledge/TK, pedagogical knowledge/PK, and content knowledge/CK (Koehler et al., 2013). This framework has intertwined constructs besides TK, PK, and CK, namely technological content knowledge (TCK), technological pedagogical knowledge (TPK), pedagogical content knowledge (PCK), and technological pedagogical and content knowledge (TPACK).

This TPACK framework has been rapidly adopted by preservice teachers (Tseng et al., 2020), in-service teachers (Aniq et al., 2022), and university lecturers (Tai et al., 2015).

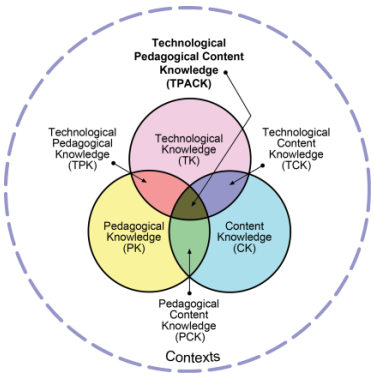

Fig. 1: The components of the TPACK framework

Table 1. **TPACK framework** (Harris et al., 2009)

Domains	*Description*
Technological knowledge (TK)	Knowledge and skill using technology tools
Content knowledge (CK)	Subject-matter competence, including the competence to pinpoint content-specific learning objectives, is required to successfully instruct students in each course.
Pedagogical knowledge (PK)	Theoretical and methodological understanding is necessary for teachers to produce the required instruction.
Pedagogical content knowledge (PCK)	The practitioner expertise required to design and deliver successful content-specific instruction
Technological pedagogical knowledge (TPK)	Knowledge of how technology impacts teaching and learning
Technological content knowledge (TCK)	Understanding the reciprocal relationship between technology and content ultimately leads to appreciating how digital technologies can promote content-specific learning objectives.
Technological Pedagogical Content Knowledge (TPACK)	Teachers' knowledge enables teachers to construct pedagogically sound, technology-integrated content instruction.

Santos and Castro (2021) revealed that instructors had a solid understanding of TPACK. Additionally, there is a modest association between the instructional technology offered and their TPACK practice. In addition, their findings indicate that TCK and TPK significantly impact the success of TPACK integration.

TPACK's praxis: The happening-ness in actual EFL reading classroom

A significant tenet of TPACK development is that the knowledge is positioned in a content-specific context rather than more general (Koehler, Mishra, Kereluik, Shin, and Graham in Spector et al., 2014). Consequently, the TPACK framework relates to teacher autonomy and recognizes teachers as designers, especially in rapidly evolving technologies, as a significant feature (Mishra & Koehler, 2008; Schmidt et al., 2009). Thus, teachers are positioned as praxis acknowledges who are continually obliged to create morally dense and value-laden decisions about their work with technological, pedagogical and content knowledge as their recent decision-making considerations.

Praxis is a form of conscious, self-aware action distinguishable from technical action (making action) and theoretical reflection. This praxis concept is centralized as the sense of knowing what one is doing in doing it (Kemmis, 2012). It pertains to what occurs when individuals act and to the fact that it occurs through human subjects who act. The actual practice (praxis), sensuousness, humanity and sociality are at once evident and challenging to comprehend. It is difficult to comprehend since when it became an object of human cognition, the possibility of transitioning from the 'rawness' of conscious human social behaviour to discourse about it existed. In short, knowledge is not action, the theory does not practice, and words are not the world.

The investigation of TPACK's praxis is committed to practical study. It is likely to conceptualize action and practice in subjectivist terms as activities authored by the individuals who execute them that might be enacted differently if people see compelling reasons to do so. A deliberate and conscious connection between an action phase and a conceptualization and reflection phase characterizes praxis. Thus, TPACK's praxis in the EFL reading classroom contains conscious actions in manifesting technological, pedagogical, and content knowledge (TPACK) in actual classes, resulting in similarities or differences from theory, considering that praxis is out of control context-bound.

Many studies have been conducted to investigate the implementation of TPACK in language learning, but only some have dived sharply into the TPACK praxis in EFL reading classrooms. A study on how pre-service teachers seek to acquire the TPACK necessary to incorporate corpus tools and Data-Driven Learning (DDL) pedagogy into classroom practice reveals that DDL can be successfully incorporated into classroom practice during the lesson planning stage (Crosthwaite et al., 2021). Another study explored the impact of applying TPACK on students' reading comprehension (Abu-Hardan et al., 2019) states that there is a positive result for the experimental group was achieved, which indicates the positive impact of TPACK-based instruction on the student's reading comprehension. Regarding teachers' beliefs, a study on how pre-service teachers design technology-based reading texts to improve their TPACK reveals that teaching reading skills to students in an unconventional manner makes learning pleasant and engaging (Gozukucuk & Gunbas, 2022).

Revisiting Technology-infused Teaching under TPACK Framework in Reading

Technology enables students and teachers to be more responsive to learning (Abidin et al., 2021) and resulting in a greater diversity of approaches to effective language instruction (Chen et al., 2019)mobile learning technology extends the capacity of modern learning to fulfill location-based learning for learners to learn everywhere contextually. This study developed a digital interactive geographic map (iMap. As a result, teachers play a crucial role in the effective integration technology-based teaching by facilitating students' development of high-level cognitive skills and encouraging them to take responsibility for their own learning as they apply these skills to the use of technology (Abidin et al., 2021). A framework like TPACK is needed to assist teachers as they learn to utilize various technologies for learning due to the rapid development of technology in today's schools (Baser et al., 2016). The knowledge and skills needed to choose from the various technologies and digital resources accessible to those that are best suited to students in their unique environment should be provided to teachers. Therefore, the TPACK framework guides EFL teachers to have the ability to (a) integrate technology and content in pedagogically sound ways; (b) choose appropriate technologies; (c) create technology-enriched language learning environments; (d) ensure equitable access to digital language learning materials; (e) use technology to demonstrate intercultural communication; and (f) engage in digital language learning (Bostancıoğlu & Handley, 2018; Schmidt et al., 2009)(2. Several technologies for enhancing language learning were assumed to empower and benefit like video conference, LMS, and Whatsapp (Amin & Sundari, 2020), perusall.com e-reading platform (Clarke, 2021), iSpring platform (Kosareva et al., 2021), gamified platform and online game (Janebi Enayat & Haghighatpasand, 2019; Prados Sánchez et al., 2021).

The students reported that they had positive views of the technology used in the classroom and believed they were generally beneficial for language learning (Zhang & Zou, 2022). Rachels and Rockinson-Szapkiw (2018) assigned a

group of students to practice vocabulary and grammatical skills on a Duolingo and compared the outcomes to another group of students who practiced in the traditional manner. The gamified learning is proven to improve motivation but had little impact on improving vocabulary and grammatical skillscompetence. Castañeda and Cho (2016) designed mobile-based gamified language learning practice environments by asking students to assess and practice their accuracy in conjugating verbs through games. The findings of the pre- and post-tests revealed that the game-based practices improved the students' grammar understanding. Tan, Chen, and Lee (2020) designed Livescribe, a multimedia computing platform that enables learners to perform listening exercises by tapping an interactive board. The platform operational logs, a questionnaire assessing the participants' motivation, a metacognitive awareness questionnaire, and two sets of pre- and post-listening comprehension tests were all examined. The findings revealed that the proposed practice approach enhanced students' motivation and listening comprehension and motivation.

Method

This exploratory case study aimed to identify and investigates classroom practices in which the TPACK framework is broadly integrated into EFL reading classes in Indonesia. The study was conceived as a series of interrelated qualitative case studies (Yin, 2018) to provide detailed descriptions of TPACK practice in EFL reading instruction in senior high schools in Indonesia. A total of three English teachers from three differences provinces (administrative division of a nation) in Indonesia were recruited to participate using purposive sampling in this study. The purposive sampling was aim at recruiting exemplary EFL teachers integrating technology in their classroom as participants to achieve the rich data about how participants use digital tools within the EFL reading content and pedagogical strategies under the TPACK framework. The teachers involved had been identified as having technology-rich learning and have demonstrated a commitment for applying technology-infused teaching in pedagogically sound ways according to the previously distributed EFL-TPACK survey results proposed by Baser et.al., (2016). The survey consists of 39 statements describing the quality of teachers' technology integration in EFL classroom, including statements relating to TK (9 items), CK (5 items), PK (6 items), PCK (5 items), TCK (3 items), TPK (7 items), and TPACK (4 items). The survey was validated by two rounds of exploratory factor analysis (EFA).

The data were collected through survey, classroom observation, in-depth interviews and artifacts. A research consent informing the aims of the study, their participation, and how the data were collected and analyzed were sent to the participant. An interview protocol was developed based on the theory of the TPACK framework by Mishra & Koehler (2006)while addressing the complex, multifaceted, and situated nature of this knowledge. We argue, briefly, that thoughtful pedagogical uses of technology require the development of a complex, situated form of knowledge that we call Technological Pedagogical Content Knowledge (TPCK, which further modified for EFL instruction by Baser et al. (2016). A semi-structured interview was deployed in this study since it allows a researcher to go deeply into a topic to make a significant discovery (Magaldi & Berler, 2020).

In order to gain a comprehensive insight into the participants' praxis, this interview centered on the teachers' philosophies regarding professional knowledge, qualities, and practice, as well as their perceptions of how their philosophies were represented in the classroom. The interview protocol is divided into seven domains of questions covering fourteen questions. Those interviews were recorded to be a transcript for further analysis. The classroom observations lasted for eight meetings, ninety minutes for each. The data, which are field notes and interview transcripts, were then analyzed using the interactive model proposed by (Miles et al., 2020). The participants also checked the results to ensure their reliability.

Findings

The Teachers' TPACK praxis in Indonesian EFL reading class

In-service Teacher 1 (IST-1)

IST-1 demonstrated proficient technological knowledge in integrating technology for enhancing EFL learning. Microsoft Team is viewed as the collaboration platform mandated by the government. It is a collaboration tool to share information related to materials and links to other materials related to classroom topics (TPACK). Moreover, IST-1 used Padlet as a reflective collaboration tool to accommodate the student's reflection on her classroom instruction. The teacher showed the independence of technology since the operation of all

Table 2: The Demography of Participants

Code names	*Gender*	*Age*	*Latest Academic degree*	*Teaching experience (years)*
IST-1	F	36	Bachelor	2
IST-2	F	46	Master	22
IST-3	F	31	Master	8

Table 3: TPACK praxis interview protocol (Baser et al., 2016)

Number	*Criteria*	*Description*	*Item*
1	TK	The extent to which the teachers use, utilize or integrate multimedia using text, pictures, sound, video, and animation.	1
2	CK	The extent to which the teachers demonstrate competence in mastering English written text	1
3	PK	The extent to which the teachers show pedagogical strategies which accommodate the students' particular context	3
4	PCK	The extent to which the teachers' design, assess and deliver successful content-specific instruction	2
5	TPK	The extent to which the teachers share their knowledge of technology integration in appropriate teaching practice.	3
6	TCK	The extent to which the teachers show their understanding of technology-used and reading content in a specific learning context	1
7	TPACK	The extent to which teachers construct pedagogically sound, technology-integrated reading instruction.	3
Total Questions			14

technological applications/platforms/tools was self-executed in teaching English (TK).

IST-1: I also use collaboration tools. I use Microsoft Teams since the school mandated Microsoft Team as a Learning Management System for synchronous and asynchronous learning. Besides, I also use Padlets for classroom communication. Padlet is used for giving feedback, uploading or continuing comments to students. (Int. 1/35)

IST-1 adopted and designed teaching materials from authentic materials in the form of text and video, which deliberate multimodal in the form of pictures, text, colour, sound and motion in e-books using the Book Creator online application. An English teacher in a vocational school is required to teach English for Specific Purposes (ESP) based on the department organized by the school. It requires teachers to be creative in compiling learning materials because there are no standard English books or specific references for each department. Therefore, the teacher must read and identify whether the materials relate to the syllabus (CK).

IST-1: I teach English to Pharmacy students. Since I am not a pharmacy major, I must read about it to design and teach ESP to Pharmacy students. I learned the ESP pharmacy book from one a private university. I matched it first with the syllabus. Do the materials follow the syllabus? If the materials are suitable, I will use them to teach students. (Int. 1/09)

In presenting learning materials related to the world of pharmacy, IST-1 used multimedia devices in the form of videos displayed on the video-sharing platform 'youtube' (TCK). The observation reveals that small group discussion and reading aloud were mainly accommodated in all instructional processes (PK).

IST-1: I implemented read-aloud when I had enough time. Sometimes the text is too long, so it takes a long time to read. I ask to read it aloud for some classes that are active and have upper-mediate competence. (Int. 1/13).

The assessment was committed in sophisticated manners accommodating games in the web-based online game platform, wordwall.net, en.islcollective.com and quizzes.com (PCK). Moreover, the Google Form was also used to administer an online reading test. The fair reflection practice in the Know-Want to Know-Learn (KWL) technique in the Padlet platform to accommodate the student's impression of the learning process was applied to evaluate the teaching process. IST-1 also applied ready-used educational games from the internet and teachers' personalized-designed game for teaching reading.

IST-1: I used the game-based learning I got from the workshop. (Int. 1/151)

In managing the classroom under one-to-one technology, teachers allowed students to operate their mobile phones for learning purposes. It allows students to learn from e-books or videos. Moreover, it enables teachers to share links with the students through Microsoft Teams, Google classroom, cross-platform centralized instant messaging, and Whatsapp groups. The teacher provided support on the technology-used and individualized needs using information technologies under one-to-one technology in specific presented content.

IST-1: I try to meet students' personal needs using technology. I also use it to manage the learning environment. Using technology helps us to have better learning. They can learn independently. I usually give assignments before in-class learning, like watching videos or reading text completed with illustrated pictures to make it more interesting. I selected and adjusted it to their needs (Int. 1/140).

In arranging instructional design, IST-1 departed from determining ESP-based learning materials related to the Pharmacy context (CK). The adaptation was needed since she took much authentic material for learning purposes. Later, IST-1 determined the learning strategy (PK) and technology used.

IST-1: I chose a more practical strategy and adjusted it to the current conditions. I will explore the material with this strategy. (Int. 1/63)

IST-1: This goes back to the problem I found in class: the students' technological readiness. I welcome technology developments. For example, making a recount text is not enjoyable if I merely write a plain recount text. It will be more exciting and attract student engagement if I use Canva. In short, it is more exciting and motivating. Nevertheless, it feels more burdening for some. (Int. 1/83)

Several considerations were made related to the current teaching atmosphere, the pedagogical strategies' practicality, students' technological readiness and the excellence of the technology in a particular educational context.

In-service Teacher 2 (IST-2)

IST-2 manifested the technological knowledge using multimedia devices incorporating pictures, text, colour, motion and sound. The power point and video were admitted as the prominent media used by teacher B (TK).

IST-2: I often use multimedia devices. I have never made the teaching media. I am still deciding whether to create sophisticated media. Moreover, it also takes a lot of time. I preferred to browse the materials I needed on the internet, for example, job interviews. I look for a video that leads to it. (Int. 2/01)

Despite videos containing related content, teachers used commercial exercise books from private publishers to reference learning materials (CK). The materials were further developed following teachers' classroom instruction. IST-2 clearly stated that the commercial students' worksheet is still relevant for stimulating oral and written communication in her class.

IST-2: Sometimes, teachers discredit the commercial exercise book. I do not have a problem using it in my class. The commercial exercise book provides tasks that stimulate students to communicate and practice their English. (Int. 2/01)

IST-2 applied small group discussion in almost classroom practice (PK). She focused on the students' activeness and interaction using English, so she applied a flexible teaching strategy. In a particular case, the mixed method was created suiting the sudden shifting of learning context.

IST-2: I accentuated how to make my students communicate actively in English since they are required to be able to communicate in the workplace in future. How to stimulate the interactions among them is my priority. (Int. 2/22)

IST-2: I adjusted my teaching strategy to the changing situation in the classroom. If my plan does not work, I will change it. I mix strategies and techniques in teaching. I even modify to achieve my teaching goal. (Int. 2/23)

The process and outcome evaluation was carried out in modest and conventional ways (PCK) in IST-2's classroom instruction. The most exciting characteristic of the reflection process was that only three reflective questions related to the teaching and learning process, which reflects IST-2s' beliefs, as admitted in the interview. The outcome evaluations were carried out in daily examinations and quizzes presented in wordwall.net and Kahoot, an online quiz maker and a news generator application for reading and writing comprehension tests.

The demonstration of teachers' TPACK was shown when IST-2 designed the Kahoot and Wordwall web-based game and activity maker. The content materials (news items) in Kahoot and Wordwall were adapted from authentic materials from the national e-newspaper "The Jakarta Post". The teacher also used a multi-platform messaging app (Whatsapp Group) and Google Classroom as the sharing and collaboration platforms to deliver the message and teaching materials. The use of one-to-one technology utilizing the students' smartphones in the reading classroom affects the students' easiness of accessing the instructions.

In-service Teacher 3 (IST-3)

IST-3 was shown her technology literacy by performing multimodal teaching materials integrating text, picture, colour, sound and motions in the form of a video about Covid-19 taken from Youtube (TK).

IST-3: I searched the material, such as a video on the Youtube channel. Then I bring it to class. I ensure I master the topic of discussion first before going to class. (Int. 3/03)

IST-3: I usually use multimedia devices. I teach using illustrated text or video. I create the teaching materials in PowerPoint to make them more attractive. If I need more time to create it, I usually download it. I make sure that the materials are suitable to be used in class. I usually take it directly from the internet or modify it. (Int. 3/01)

The teacher demonstrated her content knowledge (CK) in determining the content materials under the explanation text presented in the PowerPoint (TK-TCK). She carefully explained the features of the explanation text, followed by a sample of

the text. She differentiated the text being learnt based on the average level of students' competence in her class (PCK). The commercial exercise book from a private publisher was used as a reference.

Small group discussion was applied as the pedagogical strategy in IST-3's instructional process for two reasons: facilitating the students' different levels of competence and solving the problem of internet access (PK).

IST-3: I analyze the students' abilities and consider the possibilities for using the text and strategies in a particular class. I sometimes teach different texts from one class to another. I checked the level of difficulty of the text. Later, I modify the text as teaching material and strategy to suit the student's competence. (Int. 3/07)

IST-3 permitted the students to use online dictionaries such as the Oxford online dictionary as the embodiment of teachers' support in utilizing technology to fulfil the students' personalized needs in developing reading competence. The gamification as a part of the outcome assessment was committed by creating an educational game related to teaching materials (explanation text) on https://quizizz.com online platform. The teacher designed the customized content integrating multimode such as colour, text, picture and sound (TPACK).

IST-3: After exploring many applications, the quizzes are the most suitable game maker for me. Instead, there is WhatsApp to share the materials easily. (Int. 3/35)

IST-3: The use of an application such as quizzes is fairer. The students work in real-time and immediately get grades. Moreover, they also can see their friends' scores which raises their competitiveness. Students can catch up on grades, and this authentically reflects their ability. Using technology for assessing the students differs from the traditional assessment that has the possibility of students cheating. Students play games and hold their mobile phones. They work with an automatic timer so the result can be ascertained to be their work (Int. 3/62)

Incorporating one-to-one technology, teacher IST-3 also used Whatsapp messenger to share the links and information related to the learning process. She also used Google Classroom as a collaboration platform to manage classroom attendance, share teaching materials, publish lesson plans, and organize tests and assignments.

IST-3: I use Google classroom. Teachers can mark students' attendance and share the lesson plan and teaching materials in video and text. The platform organizes the students' work since students can upload the task. The platform features also enable to display of the student's scores. (Int. 3/39)

Morally dense and value-laden considerations in determining the teachers' TPACK praxis

Teachers' morally dense and value-laden considerations affected their TPACK praxis. These considerations determined the content materials, pedagogical strategies, evaluations and technology integration in teaching reading, reflecting teachers' TPACK.

The importance of Social and Emotional Learning (SEL) in TPACK integration

Social and Emotional Learning (SEL) is essential; thus, the students were placed in a situation where social interaction was a top priority in language learning. Interaction and communication were the core of developing more complex language learning skills.

IST-2: I believe that communication between teachers and students and students to their friends is essential in language teaching. It powerfully highlights the interaction in developing language skills. (Int. 2/06)

*IST-2: I want to show a video that accommodates Social and Emotional Learning (SEL). That is what students need so they can socialize with their friends using English. I want to bring up wha*t students need and what they need to realize that it is their actual needs. We have to raise their awareness. When I played videos, I kept provoking their minds to ask questions and interact with others. (Int. 2/54)

The belief in the essence of social interactions under SEL became the primary consideration in determining the teaching materials (CK-TCK) and the pedagogical strategy (PK-PCK-TPACK). The primary pedagogical strategies, small group discussion and group work were employed in all participants' reading classes.

IST-1: I make students actively participate in my class by designing interesting teaching material and activities. Students must be active in learning. Moreover, I required collaboration among students. I believe that if the students work on his/her own, there is no communication. There was no feedback, so I always assigned them to groups. The students are demanded to be constructive in the groups to establish their thoughts, writings and experiences in learning. (Int. 1/86)

Catering for all students' diversity using the TPACK framework

As the decision maker and actors in ELT, teachers considered the diversity of students' learning environment, language competence and learning style in adopting and adapting the technology in their technology-infused reading classes. The effort to cater for all students' diversity was made by

optimizing their TPACK competence in determining the teaching materials (CK) and technology for learning purposes (TK-TCK).

IST-1: I am more concerned about students' learning environment and current conditions. Before de*livering teaching materials, I analyze their competence and adjust the materials suited to their level. I make it acceptable for all students. (Int. 1/19)*

IST-2: I fully believe I have met the students' needs with classroom technology since it helped them visualize. What was heard was also helpful for students to understand better and clarify the material. They feel the benefits of technology indeed. (Int. 2/52)

Further, the personal approach was made to look deeper into the student's learning needs in reading class.

IST-2: I approached students and asked about their needs when I was teaching. (Int. 2/32)

Regarding the diversity of the student's competence in each class, teachers viewed that developing and modifying materials and pedagogical strategies (CK-PCK) were needed. All teachers demonstrated their ability to modify and create authentic materials for educational purposes (CK). They even transferred media from written text into multimedia learning materials incorporating text, images, colours, sounds, and animations, like PST-1, which created digital books using the Book Creator app (TCK). In addition, the gamification applied by all teachers through Kahoot, Quizizz and Wordwall platforms was the embodiment of learning efforts to meet the student's learning needs in various socio-cultural differences, learning methods, and competencies in reading (TPACK).

IST-3: I observed the students' competence. I teach different texts for one class to others, considering their competence. I observed whether the vocabulary was easy to understand at first. I adjusted the student's competence then (Int. 3/07).

Prioritizing students' personal development in reading

Students' personal development in reading became the priority for all teachers. It was admitted that technology-facilitated personalized learning needs and development. The self-paced games in Kahoot, Quizizz and Wordwall, as designed by teachers, were aimed at facilitating students' personal development and diverse learning speed. Moreover, using online translator machines manifests teachers' commitment to independently developing students' reading competence (TPACK).

IST-2: I allow students to use Google translate or other online translation tools to complete the assignment. It facilitates the students' needs better than a hard copy since it is easy to access. Moreover, it provides a model of pronunciation. (Int. 2/43)

The usefulness of technology in learning reading and its accessibility for students

Technology integration in classroom practice made teachers reconsider the usefulness and accessibility of technology for students, as admitted by teachers.

IST-2: To my personal taught, I have found beneficial applications *such as Wordwall, Funny News Generator and others. Since I implemented TPACK, almost all students were on task. All were enthusiastic about doing the task. (Int. 2/14)*

IST-2: We used Google Classroom, Moodle, and Kahoot before. Google Classroom is mainly used since all students are familiar with it. However, there are problems with the internet connection. Sometimes, they faced difficulty accessing Google Classroom due to the location of their homes in the mountainous area. As a solution, I sent the materials and assignment via WhatsApp, which is accessible to them. It is also more interactive than Google Classroom, considering the geographical location of their settlement. (Int. 2/13)

IST-3: For utilizing technology in teaching, I ended up looking for it by myself. So I arranged teaching materials and browsed an application to support students' learning. (Int. 3/28)

Discussion

Teachers' TPACK praxis in reading instruction occurs when teachers make decisions and act in the moment-by-moment activity of the classroom, considering the moral implications of the actions. The findings indicate that teachers have presented technology-based teaching into EFL reading classroom under TPACK framework. The technology integration varies depending on teachers' knowledge and technological competence as seen from the complexity of the technology employed. The technology integration in EFL reading classroom was carried out by carefully considered the content materials and pedagogical aspects. The findings provides evidence that teachers having higher educational background may have more technology-related learning experiences, allowing them to develop competency and comfort in applying technology in their daily life and at work, as well as having higher levels of TPACK. Moreover, teachers' teaching experience may affect their confidence in technology integration in their classroom (Cheng & Xie, 2018).

The in-depth knowledge of educational technology in reading instruction exemplifies that teachers are technologically literate. Whatsapp, primarily used as a mobile messenger application, was perceived as practical and helpful in facilitating language learning (Amin & Sundari, 2020). Moreover, the use of multimedia devices, even gamification,

was the manifestation of teachers' technological knowledge (TK) and content knowledge (CK-TCK) in the production process. Mishra & Koehler (2006) argued that technology-integrated teaching had emphasized technology in ways that were before unimaginable. Thus, TK becomes an essential component of overall teacher knowledge. Technology attempts to engage students and offers more enjoyable learning experiences (Gómez, 2015).

Adopting and adapting authentic reading materials reflect teachers' praxis of their actual content knowledge (CK). Teachers demonstrate their subject matter expertise, including identifying content-specific learning goals to teach effectively in each discipline. Teachers adapt materials in their everyday practices methodically or intuitively (Garton & Graves, 2014; Harwood, 2017), mapping the connections between the materials and the actual instruction taught in the classroom (Li & Li, 2021). The presentation of teaching materials is technologically supported, which enables students to read on-screen reading (CK-TCK). Some instructional tools on the screen seemed more effective than others for fostering word knowledge depth (Wong & Neuman, 2021) and supporting students reading.

Moreover, the on-screen reading material and hypertext-based rich learning environments helped students with their self-regulation skills, increasing their motivation (Roskos & Neuman, 2014) and improving their reading comprehension (Lysenko & Abrami, 2014). For students, on-screen reading allows students to take shortcuts by scanning, skimming, and clicking from link to link. It can be a helpful tool since it aids in locating relevant content (Lunsford, 2015).

Realizing that the TPACK framework is interrelated, the teachers' content knowledge (CK) and praxis provide contributions to pedagogical strategies determination. Santos & Castro (2021) reported that teachers' content knowledge could be used to recognize students' struggles in understanding the materials and changing the teaching method to the student's needs. Teachers show their pedagogical knowledge (PK) and praxis in determining group discussion and group work as the prominent pedagogical strategies in reading instruction. The presented-content materials and the prioritized learning goal where social interaction is positioned as the primary goal (PCK) become the fundamental consideration in determining the strategies. Moreover, the process and outcome evaluation was committed sophisticatedly through gamification in e-quiz and online assessment in Google form (TPACK). The teachers' PK and TPK praxis represent teachers' knowledge in mastering theoretical and methodological knowledge to deliver appropriate instruction (PK) and their ability to deliver and develop content-specific instruction (Mishra & Koehler, 2006)while addressing the complex, multifaceted, and situated nature of this knowledge. We argue, briefly, that thoughtful pedagogical uses of technology require the development of a complex, situated form of knowledge that we call Technological Pedagogical Content Knowledge (TPCK

Demands for using technology to improve teaching and learning have increased in recent years (Chauhan, 2017; Yenkimaleki & van Heuven, 2019). In EFL education, the needs are considerably greater because technology is linked to instructors' participation (Raygan & Moradkhani, 2020) TPACK, and attitude interact with teachers' success in technology integration throughout their teaching process in EFL classes. To this end, data were collected from 209 Iranian EFL teachers. The results from conducting a series of Pearson correlations indicated a significant association between teachers' TPACK and attitude and their technology use. Moreover, a significant relationship was found between school climate and teachers' attitudes. Considering direct and indirect relations, structural equation modeling was employed so as to examine the relationship among the variables (i.e., school climate, TPACK, attitude, and technology integration. TPACK presents a framework that enlightens on how technology can convey knowledge in pedagogically significant ways, create conditions, and engage students in processes that enhance learning (Mishra & Koehler, 2006) while addressing the complex, multifaceted, and situated nature of this knowledge. We argue, briefly, that thoughtful pedagogical uses of technology require the development of a complex, situated form of knowledge that we call Technological Pedagogical Content Knowledge (TPCK. It demands the teachers' understanding of integrating TPACK and the appropriate decision-making to implement the concept sequences committed by teachers to provide evidence that teachers successfully bring technology for delivering specific reading instruction. The teachers' competence in managing collaboration tools, learning management systems (LMS) and delivering the reading instruction and assessment, which are technologically supported through the game and online assessment platform, reflects their TPACK praxis.

The decision-making in practicing TPACK requires morally dense and value-laden considerations to achieve the targeted learning goals. This study found that teachers' belief in the importance of social and emotional learning (SEL) in TPACK integration influences teachers' decision-making in determining content materials and pedagogical strategies. The attempts were made to stimulate interaction and communication through group work facilitated by technology. The group functioned most effectively when students utilized their diverse skills, expertise, and understanding to complete the task. For emergent bilinguals, group work is regarded as advantageous because it gives students a chance to develop language by understanding information and negotiating meaning, enhance their understanding of subject matter by making their beliefs explicit, and build on the learning of others (Molle & Lee, 2017).

Teachers' effort in catering for all students' diversity was wrapped up by adopting and adapting reading content materials and using technology for educational purposes. The adaptation of authentic materials followed by the redesigning process of the teaching materials in sophisticated format incorporated the use of technology in slideshow, game, and digital book utilizing pictures, texts, colors, audio and motions is aimed at facilitating the students' diversity in learning. To effectively deliver high-quality instruction to their students and to create a welcoming learning environment for all student groups, teachers, as policymakers, must ensure that educational actors have many chances to deepen their awareness of student diversity (Min & Goff, 2016).

Prioritizing the students' personal development also became essential in TPACK practice decision-making. Further, an online game was created and set up in self-paced mode to accommodate the difference in students' language competence and learning speed. Thus, teachers' attitude in allowing students to use online translator machines was expected to fulfill the students' learning needs. In this context, attitudes are referred to as a collection of behavioral intentions that foretell the use of technology and, if correctly examined, can transform technological recommendations into technological use (Scherer et al., 2020)two key assumptions persist in the existing body of literature: First, the technology acceptance construct can be represented by a set of diverse, yet correlated attitudes and beliefs. Second, the effects of technology acceptance on the intentions to use technology and technology use—two commonly studied outcome variables—follow a cascade. The existing evidence backing these assumptions is, however, diverse, as the considerable between-study variation in the relations between the technology acceptance and outcome variables shows. This variation remained largely unexplained, and the present study offers an explanation from the perspective of construct validity. Analyzing a large meta-analytic sample (N = 37211 teachers.

The environmental implications of implementing technology in EFL instruction go beyond the convenience of using technological tools (Raygan & Moradkhani, 2020) TPACK, and attitude interact with teachers' success in technology integration throughout their teaching process in EFL classes. To this end, data were collected from 209 Iranian EFL teachers. The results from conducting a series of Pearson correlations indicated a significant association between teachers' TPACK and attitude and their technology use. Moreover, a significant relationship was found between school climate and teachers' attitudes. Considering direct and indirect relations, structural equation modeling was employed so as to examine the relationship among the variables (i.e., school climate, TPACK, attitude, and technology integration. In determining TPACK practice, teachers also consider the usefulness and accessibility of technology. The use of technology is determined by learning objectives and materials. Accessibility is also reconsidered to minimize interference in the use of technology in language learning, especially reading.

Conclusion

This study explores the teachers' TPACK praxis of three teachers in teaching reading for senior high school. Findings reveal that the TPACK framework was broadly integrated into EFL reading class. All exemplary English teachers demonstrated technology-rich learning manifesting their understanding of technology, pedagogical strategies and specific content materials into reading classroom utilizing the multimedia devices. Technologically literate drives teachers to act as technology users and materials designers in technology-rich classrooms. Gamification in learning is a portrait of a slick integration of TPACK. As TPACK praxis deliberate teachers' morally dense and value-laden considerations, several considerations were made in the decision-making process. Teachers' belief in the importance of SEL, the desire to accommodate students' diversity, prioritizing the students' personal development, and the usefulness and accessibility of the technology used are considered. The finding of the study implies that at the sophisticated level, teachers do not position themselves as technology user yet content-designer in technology-infused teaching.

Limitation and Future Research Suggestion

The study focused on TPACK Praxis in EFL Reading classrooms. However, the study was limited to exemplary in-service English teachers who had special teaching characteristics and knowledge that are not necessarily possessed by all teachers. Therefore, the findings of the study might not be generalizable to other contexts. This study also limits the female teachers as participants. Involving male participants or comparing the results between male and female participants is suggested for further study which may focus on the difference praxis of TPACK viewed from gender perspectives.

Source of support

This research was funded by the Institute of Research and Community Service of Sebelas Maret University Indonesia through a doctoral dissertation research grant with Contract Number: 254/UN27.22/PT.01.03/2022

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