

INTEGRATING TPACK INTO ENGLISH LANGUAGE TEACHING BEFORE AND DURING COVID-19 PANDEMIC: THE STATE OF THE ART

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Abstract. Nowadays, the Covid-19 pandemic has brought a profound impact on English language teaching (ELT). Consequently, the English language teachers had to adapt and shift to remote teaching utilizing technology quickly. This article reviews the recent studies and practices of integrating the TPACK (technological pedagogical content knowledge) framework in ELT. To this end, the previous studies and best practices of employing technology in ELT by the English language teachers before and during the Covid-19 Pandemic are reviewed and discussed based on the TPACK framework. Moreover, the studies conducted before and during the Covid-19 Pandemic are analyzed to know the consistent use of the TPACK framework in the ELT context. The analysis results inspire the future orientation of integrating the TPACT framework in the English language teaching post-Covid-19 Pandemic.

Keywords: technological pedagogical content knowledge, TPACK, ELT, covid-19 pandemic, online learning

INTRODUCTION

Nowadays, the pandemic of Covid-19 has impacted every part of life, including educational activities. It led in a high death rate and the temporary closure of educational institutions such as schools and universities. To continue educational practices, educators are being pressed to transition from face-to-face instruction to distant or online instruction via the integration of digital technology. Online education, on the other hand, is not a novel style of instruction in the educational system. Online education is now popular, owing to the increasing popularity of the internet and the increasing number of individuals who have access to computers at home (Compton, 2009).

Following the rapid change and emergence of integrating technologies into learning, there are still unanswered questions regarding the effective integration of technologies into the teaching and learning processes, particularly in the language learning process, in order to prepare students to become empowered learners. The purpose of this paper is to review and discuss the integration of the TPACK (technical, pedagogical, and content knowledge) framework into English language instruction prior to and during the Covid-19 pandemic. To accomplish this, it first introduces the TPACK concept and its components.

Then, it continues to review and discuss the previous studies and practices of integrating TPACK before and during the covid-19 pandemic. Finally, drawing from the findings of the earlier studies, the articles outline the trends and recommendations for the integration of TPACK into English language teaching post-covid-19 pandemic. TPACK is a framework that introduces the interplay and complexities among three basic domains of knowledge: technology, pedagogy, and content. It implies that effective

technology integration into English language teaching depends on content and pedagogy. Thus, understanding TPACK as an effective framework for English language teaching is necessary for teachers and scholars.

UNDERSTANDING TPACK AS A FRAMEWORK FOR EFFECTIVE TEACHING

TPACK (Technological Pedagogical Content Knowledge) is a relatively new research field created and developed by educators and researchers. Originally conceived and advocated by Koehler and Mishra in 2005 (Angeli & Valanides, 2015), TPACK addresses three domains of knowledge: content (C), pedagogy (P), and technology (T), as well as their interactions - PCK, TCK, and TPK. In 2007, Koehler and Mishra renamed their TPACK to TPACK, a more readily spoken and remembered acronym.

Since then, TPACK has been widely used by educational academics interested in integrating technology into teaching and learning. According to Mishra & Koehler, (2008), teachers must grasp the intricate relationships between content, pedagogy, technology, and knowledge of the educational context, including knowledge of the students, the school, the learning infrastructure, and the environment, in order to successfully integrate technology into the classroom.

The growth of the TPACK framework in an educational setting is based on premise that teaching is a multidimensional activity which requires various knowledge domains Mishra & Koehler, (2006). As argued by Shulman (1987) and cited by Mishra & Koehler (2006), the knowledge of teaching is not limited to pedagogical and content knowledge (understanding of subject topics). Teachers must possess particular knowledge in order to teach effectively. This knowledge encompasses both content and pedagogical information, referred to as Pedagogical Content

Knowledge (PCK), as well as technology knowledge that empowers the learning outcome. Mishra & Koehler, (2006) created a new theoretical or framework model called Technological and Content Knowledge (TPACK), adding the Shulman's (1987) idea of PCK.

Traditionally, according to Mishra & Koehler, (2006), teachers have widely used various technological devices in their classroom, from textbooks to OHP (overhead projectors); however, recently, with the advancement of technology development, the more common technology used relates to digital computers and computer software, artifacts and mechanisms that are novel. These new technologies shape the nature of the classroom and the nature of the teachers' knowledge of teaching.

Accordingly, technological knowledge is increasingly regarded as an integral part of content knowledge and pedagogical knowledge that the teachers have acquired. Content knowledge is intertwined with pedagogical and technological knowledge, and these three types of knowledge interact with one another. See Figure 1 as a visual representation of the three dimensions of knowledge.

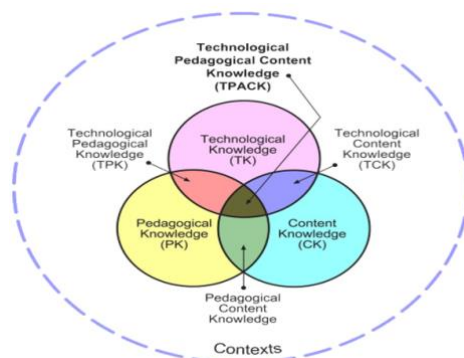


Figure 1. Pedagogical Technological Content Knowledge (TPACK)
(<http://tpack.org>).

To clear our understanding of the TPACK framework, Mishra & Koehler, (2006), (Mishra & Koehler, 2008), Shmidt, et al (2009), and [6] propose the following brief explanations about the elements and relationships of the TPACK.

Content Knowledge

The concept of Content Knowledge (CK) is concerned with the subject matter that is being learnt or taught. Content knowledge is concerned with the linguistics information, language skills, and language components that are made available to students in the context of language teaching and learning. Teachers must be well-versed in and comprehend the subject matter that they teach to learners, which is comprised of concepts, theories, and methods that are specific to a certain discipline. Accordingly, CK is concerned with the understanding of the content area or subject matter that English teachers will be teaching or that EFL students will be learning.

Pedagogical Knowledge

Pedagogical Knowledge (PK) refers to a comprehension of the approaches, methods, and strategies of teaching, as well as the ability to choose the most relevant approaches and strategies for achieving the teaching and learning objectives. PK is the understanding of how to manage a classroom, establish a curriculum, and implement a lesson plan. It includes understanding of classroom strategies and methodologies, the psychology of learning and students, language learning assessment, and language teaching media.

A teacher who possesses sound pedagogical knowledge is cognizant of the ways in which learners generate information, acquire language skills, and establish habits of mind and a

favorable inclination toward learning. Basic understanding of language teaching and learning methods such as classroom management, assessment methodologies, and lesson plan construction are all part of PK knowledge.

Pedagogical Content Knowledge

Pedagogical Content Knowledge (PCK) is the knowledge of how to teach certain content that is related to pedagogy. This includes knowing what kinds of teaching methods work best for the content or subject being taught and how different parts of the content can be put together to make better learning. It also involves teaching strategies that empower the learners learning in mastering the subject matter being learned. In sum, PCK is the knowledge of teaching strategies to effectively deliver specific language skills or subject matter to the students. Simply, PCK is how to teach and help the students learn effectively and meaningfully about the subject matter being taught or learned.

Technological Knowledge

Technology Knowledge (TK) deals with knowing technological tools used in teaching and learning ranging from the basic and standard technologies (books, chalk, blackboard/whiteboard), and more advanced technologies (the internet and digital videos). TK involves the knowledge of operating and integrating technological tools in language teaching and learning which empower students learning.

Technological Content Knowledge

Technological Content Knowledge (TCK) is dealing with understanding the reciprocal relationship between technology and content or subject matter in language teaching and learning. Teachers need to know the specific and appropriate technological

tools or e-learning platforms which are best suited for delivering the content or subject-matter of learning. In sum, TCK refers to how various technologies can be used or integrated into teaching to help students practice and learn the English language in new meaningful ways.

Technological Pedagogical Knowledge

Technological pedagogical knowledge (TPK) deals with understanding, selecting, and applying various technological tools in language teaching and learning. Technology and pedagogy mutually afford and constrain one another in any act of teaching. For example, Moodle, as one of the online learning management system, is a method of structuring online courses or conversations based on social constructionist pedagogy or social constructivism theory in the teaching and learning process. Moodle in learning may empower the students learning activities in which the students are perceived as social beings who need interaction with others in constructing the knowledge.

Accordingly, TPK covers the understanding or choosing the appropriate technological tools based on its fitness with the content to be taught, strategies, and skills and uses the devices in the teaching and learning process for better achievement or results.

Technological Pedagogical Content Knowledge

Technological pedagogical and content knowledge, or TPACK, is a new type of knowledge that goes beyond all three (content, pedagogy, and technology). So, using technology to teach effectively requires TPACK and knowing how to use it in constructive ways. This makes the process of teaching and learning a language stronger. TPACK just means that English teachers should know how to use technology to help their students learn the English language. By knowing this, teachers will be able to understand the complex relationship between the three domains of

knowledge (TK, CK, and PK) and use the right strategies and technologies to teach their students.

INTEGRATING THE TPACK FRAMEWORK IN ENGLISH LANGUAGE TEACHING: SOME PREVIOUS STUDIES

TPACK is a framework or theoretical construct used to explore the links, interactions, affordances, and restrictions of content, pedagogy, and technology knowledge Mishra & Koehler (2006). According to the TPACK framework, no single technological solution fits every instructor, course, or learning setting. Thus, quality teaching entails understanding the intricate interplay between these three knowledge levels and how to apply them in teaching.

This framework has been widely and extensively applied in science education. In language education, the use of TPACK in the EFL/ESL context is still in its infancy Koçoğlu (2009). However, there have been massive studies conducted by the English teachers applying technologies based on the TPACK framework in their classroom to help the students learn better. This section reviews the findings of the previous studies in integrating the TPACK in ELT site, both before and during the Covid-19 Pandemic, as the basis of the examination of the teaching and research trends and orientations in this area post-Covid19 Pandemic.

Studies before Covid-19 Pandemic

Numerous studies have integrated technology in English language teaching, specifically in developing the students' English language skills. Integrating technology in teaching listening help the English teachers prepare the teaching materials easily and help the students improve their listening ability. A study conducted by [8] on using digital listening text versus traditional listening text revealed that the students who were taught using digital listening text attained statistically significantly higher gain scores than those in the conventional treatment group. It implies that using digital materials or e-materials for listening comprehension exercises

affect the students' listening comprehension significantly and it helps to develop their listening skills.

Besides, using authentic video materials in listening class also affects the students' foreign language listening ability and listening anxiety (Polat & Eristi, 2019). The study uncovers authentic video materials that reflect the natural language and communication samples, which gives high results on the students' English listening skill and lower their listening anxiety. This research finding aligns with (Sulaiman, et. al (2017) stating that video media in listening provides true, meaningful, real-life context. They also say that video is employed to meet the needs of 21st-century learners, who are exposed to a lot of visual content daily.

Accordingly, more authentic video media used for teaching listening comprehension is recommended for English teachers. Other types of technological tools used in teaching listening, such as mobile learning (Rahimi & Soleymani, 2015) and podcast (Abdurahman, Basalama, & Widodo, 2018) also provide profound results on the students listening ability. According to (Rahimi & Soleymani, 2015) the use of mobile learning improves the students listening ability and decreases their listening anxiety. Moreover, podcasts, as revealed by Abdurahman, Basalama, & Widodo, (2018), positively impacts the students' listening ability. Furthermore, students were more motivated to study English since podcasts provided authentic materials, exciting activities, and meaningful tasks.

Previous studies have also used a few technological tools to enhance students' English-speaking abilities. A study conducted by Karunakar (2019) using TED Talks to encourage English language production found that TED Talks as the source in the classroom improve English language production in terms of speaking and encourage learners to use the language confidently. Besides, using English video clips on EFL students' speaking

performance improves their English speaking (Muslem, et al (2019).

Moreover, a study conducted by Angelina & Garc a-Carbonell (2019) employing web-based simulation to develop the students speaking skills revealed that the web-based simulation helps the students improve their English speaking, especially in pronunciation, vocabulary, variety of expressions, and grammar. In addition, using international language exchange video chat is also found to significantly improve and increase the students' fluency in speaking skills (Sevy-Biloon & Chroman, 2019). Moreover, the study also uncovered that the students seemed to be more intrinsically motivated to improve their speaking performance.

In teaching and improving the students' reading comprehension, some previous studies provide inspiring results. Research by Mohammadian, Saed, & Shahi (2018) using video technology to improve reading comprehension among Iranian EFL students is intriguing. It is revealed that the video materials for reading comprehension had a significant effect on promoting the students' reading comprehension. Moreover, the results of a study conducted by Dehghanpour & Hashemian (2015) that used a web-based approach to teach reading strategies indicated that the students had a good attitude toward web-based reading strategy teaching and performed better on the reading tests. The study implies that a web-based reading strategy is an alternative way of teaching reading comprehension, enhancing the students' reading ability and encouraging their positive attitude toward reading activity.

Another study on integrating technological tools, such as tablets, into teaching reading provides a profound finding (Maboe, et al, 2018). It reveals that the use of tablets enhances the students reading and learning. Tablets give students the opportunity to engage with technology in a hands-on manner while also fostering

independence. Additionally, using audiobooks on tablets was a big benefit in terms of facilitating reading development in English. This was especially true in terms of developing one's vocabulary and pronunciation. According to the findings of this study, using tablets not only improves students' ability to comprehend what they read but also their vocabulary and pronunciation. In addition, a study that was conducted by (Pasaribu, 2020) on the use of digital reader response tasks in a reading class that was based on Moodle discovered that digital reader response technology gives students the ability to plan, carry out, and assess their reading as well as their learning. The findings also demonstrated that these online activities inspired them to actively participate in the process of learning and reading, and they encouraged them to become independent readers.

Moreover, a study conducted by Conn, Sujo-Montes, & Sealander (2019) revealed that the use of the iBook feature to assist English language learners and struggling readers improves their reading comprehension. Moreover, various elements of the iBook application, such as word definitions, the note-taking tool, and Wikipedia searches, were extraordinarily useful for the instructive reading process.

Furthermore, previous research show that technology integration improves student writing. A study by Qader & Yalcin Arslan (2019) found that flipped classroom instruction improves students' writing. Similarly, Arifani, et al (2020) found that using WhatsApp in flipped classroom format improves students' writing abilities, especially coherence. Antother study by Gharehblagh & Nasri (2020) found that MALL (Mobile-Assisted Language Learning) improved EFL students' writing skills. Moreover, compared to the control sample, students in the treatment group made less errors in the targeted grammatical structures, such as the usage of adjectives, possessives, and simple present tense.

Besides, a study conducted by Sujannah, Cahyono, & Astuti (2020) employing the effect of blended learning using Google Classroom on the writing ability of the EFL students across autonomy level uncovered that the implementation of blended learning model with Google Classroom brings significant results on the students compared to another group. Further, the students who have a high autonomy level in learning outperformed the low autonomous students. Thus, the use of the blended learning model with Google classroom significantly affects the students' writing performance.

Besides integrating technology in developing English language skills, some previous studies also provide profound findings on using technology to develop learners' habits and attitudes and raise English language teachers' awareness of their language use. A research conducted by Faramarzi, Tabrizi, & Chalak (2019) revealed that the learners perceived positively and constructively toward the use of the *vodcasting* technology via Telegram application in language learning. Using vodcasting technology can transform learners' learning patterns, enhance monitoring and assessment, maximize student cooperation, and promote learner-instructor rapport. Another study Bahçivan, Güneş, & Üstündağ (2019) found that teachers had good views of their teaching. Their constructivist teaching and learning principles predicted their attitudes toward instructional technology.

A study by Yalçın, Bayyurt, & Alahdab (2020) on the influence of CLIL (Content and Language Integrated Learning) practice on English teachers' language use indicated that CLIL practice enabled the instructors to view themselves as 'competent English language users' instead of non-native English language teachers. After applying CLIL, teachers become aware of three important EFL components: language and language usage, instructional practice, and awareness of learning. Moreover, the findings uncovered that after implementing the CLIL practice, the

teachers become aware of the three major components of EFL awareness: namely awareness of language and language use, awareness of the instructional practice, and awareness of learning.

From the previous studies, I can highlight some interesting findings. Firstly, it is uncovered that integrating technology into language teaching and learning could enhance the students' English language skills and motivation in learning. Research has noted that motivation is a powerful, effective factor that significantly influences students learning. It assumes that learning is most likely to occur when the students *want* to learn when they are motivated to learn (Williams & Burden, 1997). It is because motivation moves language learners to make certain learning choices, fully engage in learning, and expend effort and persist in learning (Dörnyei & Ushioda, 2011).

Moreover, the studies indicate that the use of technological tools, such as video, in language learning provides authentic materials for learners, encouraging them to learn and develop their English language skills. Authentic materials are real-life materials. According to Kilickaya (2004) and Rogers & Medley (1988), the main characteristic of authentic materials is that they expose the real world, genuineness, and naturalness of the language and are well-contextualized in the native speakers' context. Thus, providing language learners with authentic materials through video in language learning can encourage them to learn and to imitate the native speakers' context of using the language in real communication.

The previous studies also reveal that integrating technology into language learning can promote students' positive attitudes toward learning and encourage learning autonomy. Learner autonomy is the ability to take charge of one's learning (Holec 1981 as cited by Murray (2014). This indicates that integrating technology into English language learning can promote students to be autonomous learners, a person who is responsible and capable

for their learning. Autonomy in learning is not an inherited capability. Rather, it comes from formal systematic learning and develops in a supportive learning environment. Thus, incorporating appropriate technological tools in language learning is a key to encouraging learner autonomy.

Last but not least, previous studies uncovered that technology integration into English language learning raises the teachers' awareness of language use, instructional practice, and awareness of learning. According to Thornbury (1991) as noted by Andrews (2007), teacher language awareness is 'understanding of underlying language systems that enables teachers to teach successfully'. This indicates that teacher language awareness relates to the explicit knowledge of the teacher about language, language learning, language teaching, and language use. By this explicit knowledge, the teacher could design effective English language teaching using appropriate technology, which empowers the students' English language skills. Accordingly, applying technology in teaching the English language develops the students' language skills and raises the teachers' language awareness.

Studies during Covid-19 Pandemic

Studies during the covid-19 pandemic are mostly carried out to investigate the responses of the English language teachers and students toward the sudden change and shift of face-to-face teaching to emergency remote teaching (ERT) or online learning. Mostly, the studies are related to uncovering the readiness of the English teachers on online learning, the students' perspectives and beliefs on online learning, and the challenges of online learning during the covid-19 pandemic. Thus, those studies could not be reviewed and discussed based on the English language skills categories.

Sumardi & Nugrahani (2021) studied how language teachers adapted to ERT during the covid-19 pandemic. It also relies on ERT-based instruction to encourage student involvement. Researchers used YouTube, Zoom, and SPADA to facilitate ERT-based education. The study found that ERT-based education was a beneficial instructional approach during the covid-19 epidemic.

However, the biggest problem with ERT-based instruction was that low-achieving students usually didn't have the self-control to participate virtually in class, and teachers didn't have much control over them. A study by Mahyoob (2020) also showed the difficulties that EFL learners had with e-learning during the covid-19 pandemic. It is found that technical, academic, and communication strategies are the main problems that affect online EFL learning during the covid-19 pandemic. Some technical problems include not being able to connect to the internet, not being able to get into online classes, not being able to download course materials, and not being able to open online exams on learners' phones. During the covid-19 Pandemic online learning, these are the most important problems that EFL students had to deal with. Concerning the communication problems, students in virtual English classes couldn't talk to their teachers in a good way. Researchers found that the majority of EFL students come from remote areas where the network or internet connection is the main problem. This makes it hard for them to learn English online.

In addition, the teachers and students are the new users of technology integration in the online learning mode. Moreover, a study Hijazi & AlNatour (2020) also uncovered that the most dominant factors or challenges affecting the students learning in the English language are teaching methods, social aspects, infrastructure, computer skills, and coordination. Meanwhile, the issues of assessment method, motivation & willingness to learn are recognized as the moderate factors affecting their learning success. Overall, regarding the challenges of online learning during the

covid-19 pandemic, the English teachers and students claim that the online does not run well.

Concerning the problems that English language teachers and students had with online learning during the covid-19 pandemic, Atmojo & Nugroho (2020) said that online learning during the covid-19 pandemic has a lot of problems because it wasn't planned and prepared for. They said that planning and preparation should always be done to make online learning better in the future, since online learning takes more time to get ready for than a face-to-face class. Also, the students' parents need to be told to keep an eye on their kids' online learning and make sure they keep doing it. But because the students' families are poor, the fact that they don't have smartphones, internet quota, or a stable internet connection is still a big problem.

Regardless of the challenges of online learning during the covid-19 pandemic, some studies also provide interesting findings on integrating technology into English language teaching. A study conducted by Maru & Lengkoan (2020) using video to develop writing descriptive text in EFL class during covid-19 pandemic revealed that the use of video seems to be helpful mostly to low-level students. According to them the online learning could be a solution for EFL learning during or post covid-19 Pandemic. Still, it has to be comprehensively designed and prepared to ensure the obtaining of the learning outcome. However, since their study is carried out in a school located in the city, further studies on online learning practices in the rural and remote areas during the covid-19 pandemic deserve to be conducted.

Regarding online learning practices during the covid-19 pandemic and to investigate the types of technological tools employed by the teachers in online learning, Ghounane (2020) discovered that the most dominant used tool for the educational purpose was social media, such as Facebook and Moodle platform. The study shows that the students are motivated to use Facebook,

YouTube, and Moodle in their learning. However, the finding also revealed that the students prefer face-to-face interaction and handouts more than virtual learning.

Succinctly, the previous studies reveal some interesting findings. The studies indicate that in conducting online learning during the Covid-19 Pandemic, English language teachers employ various technological tools, such as WhatsApp, Facebook, Zoom, YouTube, Google Classroom, Google Meet, Moodle, SPADA, and so forth in maintaining the learning occurrences. Despite the significant importance of integrating these tools into online learning, the studies also report that online learning during the Covid-19 Pandemic carries some challenges. These challenges are, firstly, low-achieving students typically lacked the self-discipline to engage virtually during the class, and the teachers had limited control over the students.

Secondly, English language teachers experienced technical, academic, and communication problems during online learning. The technical problems are related to internet connectivity, accessing online classes, downloading courses materials, and online assessment. Besides, the academic problem relates to the learners and the teacher have low ability and skill in operating technological tools because they are the new users of the online learning platform. Relating to the communication strategies problem, the studies found that the teachers and students could not effectively communicate and interact during online learning due to the limited access to online learning.

Moreover, other challenges of online learning during the Covid-19 Pandemic encountered by the English language teachers and students lack facilities, such as smartphones, internet quota, and stable internet connection, are still critical due to the financial condition of the students' families. Considering the challenges of the online learning experience by the English language teachers and students, the studies indicate that integrating technology into

online learning could not effectively improve the students' language skills and participation in the learning process. It indicates that integrating technology into online learning during Covid-19 may not fully succeed. This catastrophe is because online learning during the Covid-19 Pandemic is a sudden shift in response to the global impact of the coronavirus outbreak.

Thus, teachers and students do not have the necessary preparation for online learning by employing appropriate technological tools that work best for their language learning environment. Accordingly, the teachers and students prefer face-to-face (offline) learning to online learning.

CONCLUSION

The findings of the studies, both before and during the Covid-19 Pandemic, indicate that having good planning and preparation of integrating technology into English language teaching significantly affects the students' English language skills development, active participation, positive attitude, and intrinsic motivation in learning. Moreover, the findings of the studies highlight the promising trends related to teachers' interest in and employ technology in their language classroom. Following the trends, it is necessary to point out the importance of training both language teachers and students to integrate technology into their language teaching and learning more effectively and meaningfully.

Besides, successful integration of TPACK depends on teachers' willingness to accept technology and their willingness comes from their belief that technology makes a difference for their students. Successful integrating TPACK into English language teaching demands a supportive ecosystem among various variables: teachers' willingness and skills in employing technological tools in their teaching, students' active participation and skills in operating technological tools in learning, parents'

support, and institutional support system. The schools and universities should consider including technology in their curriculum development and having sustainable training on both teachers and students in employing TPACK in their teaching and learning is a demand. Besides, it is indisputable that having an excellent internet connection is the prerequisite infrastructure to make digitally technological-based education happen.

Without such required and sufficient facilities, integrating TPACK into English language teaching probably fails. Accordingly, the schools and campus environment should provide an excellent internet (Wi-Fi) connection that the teachers and students easily access. Thus, successful integration of TPACK into ELT is influenced by various factors, such as teacher' and students' knowledge and skills in technological operation, socio economic status of the parents, and school or institution organization structure and system.

Moreover, the studies on integrating TPACK into English language teaching during and post covid-19 Pandemic should reveal the innovative ways and best practices of employing technological tools in instruction. These studies are necessary to portray the comprehensive landscape of integrating TPACK into English language teaching and provide an appropriate integrating technology into ELT.

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