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PERSPECTIVES OF EFL TEACHERS ON CONTENT KNOWLEDGE, TECHNOLOGICAL CONTENT KNOWLEDGE, AND PEDAGOGICAL CONTENT KNOWLEDGE

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Abstract:
A qualitative study was conducted in a Vietnamese city to investigate the EFL teachers' perspectives on CK, TCK, and PCK. Qualitative data revealed that integrating Technological Pedagogical Content Knowledge (TPACK) into English teaching practices is considered time-consuming, impeded by factors such as time constraints and students' cognitive abilities. This study also investigated the level of content integration among educators, specifically those using traditional teaching methods emphasising textbook information. The investigation revealed a deficiency in the effective integration of technological tools during teaching practicum despite using various technologies. This is due to the lengthy duration of the process and the difficulties faced by individuals with limited proficiency in keeping pace with technological advancements. Most teachers exhibited confidence in utilizing pedagogical skills to deliver content in English classrooms, employing various effective approaches, techniques, and methods. Recommendations for future research are put forward.

Keywords: content knowledge (CK), technological content knowledge (TCK), pedagogical content knowledge (PCK)

1. Introduction

It took a long time to create TPACK, which could be a system of instructor information. TPACK was previously recognized as PCK by Shulman (1986), who expressed that instructional methods, substances, and information ought to be characterized and considered autonomous in educator instruction and interaction. TPACK is alluded to as a philosophical approach that takes PCK as a premise to coordinated innovation, whose structure was completed over five a long time to create a program with an accentuation on educator proficiency improvement and staff improvement. In spite of the fact that TPACK appears to be an unused term, numerous analysts have done significant ponders

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already. Keating and Evans (2001) were pioneers in applying the TPACK concept. Beaudin and Hadden (2004) recommended techno-pedagogical abilities in preservice instructors. Guerrero (2005) characterized PTK as direction information that's related to innovation. PTK, at that point, was alluded to as an unused space secured within the plans for organizing instructor information. Niess (2005) suggested Technology Pedagogical Substance Information within the same year. Customarily, substance information (CK) and educational information (PK) were commonly elite. In other words, in educator instruction programs, CK and PK are not closely interconnected (Shulman, 1986, 1987). Gess-Newsome (1999) contended that unadulterated CK and PK are inadequate for teaching practices, so educational substance information (PCK), which could be unused information, showed up. Similarly, Shulman proposes that instructors should have an in-depth understanding of how to join these different spaces of information. In other words, the system Shulman recommended accentuates PCK as the crossing point of subject-specific information and PK. In expansion, the importance of teachers' need to understand numerous ways of speaking to subject matter is highlighted in this system.

Within the twenty-first century, the fast improvement of computers and direction advances have changed the nature of instruction and constrained instructive education to enhance their understanding with the approach of later advances. Since the appearance of unused innovation, teachers' part as well as their qualified information, have been challenged. As long as instructively effective innovation integration is respected, it would be secure to say that it is subordinate to the suitable apparatuses of innovation and to the devices of innovation that instructors utilize. Modern, instructively basic innovation does not fundamentally bring effective instruction and learning encounters, and educators need recognizable proof to know that approximately successful innovation integration is essential (Koehler & Mishra, 2005). Improvement and usage of TPACK in educating leads to understanding around the relationship between innovation, instructional method and substance (Koehler *et al.,* 2007). In other words, if an instructor considers the significance of innovation utilised in the preparation of educating, she will accomplish a fringe subordinate in her instructing hones. It is caught that joining can be the intersection of different sorts of TK (Pierson, 2001).

Lee and Tsai (2008) contend that even though they now and then pull in students' consideration through the Web, they may not know completely the impact of innovation integration in encouraging students' improvement. According to Koehler, Mishra, Kereluik, Shin, and Graham (2013), when instructors are not learned sufficiently, their technology-related encounters can be valuable to their education and their endeavors may be restricted. Angeli and Valanides (2005); Koehler, Mishra, and Yahya (2007) contended that the main reason for their need for information in innovation integration may be due to their undergrad pre-service teachers' preparing programs. Despite the increment of technological tools and openings to assist pre-service teachers in honing innovative abilities, their encounter are not exceptionally appropriate in instructing with innovation amid their instructing hones (Kurt, 2012). Doering and Veletsianos (2006)

included that on the off chance that pre-service instructors do not get such involvement, they may not tend to utilize innovation ideally. Hence, pre-service instructor instruction programs are important in deciding successful innovation integration into instructional methods (Snider, 2003). In educator instruction programs, perceptions may be fundamental for pre-service instructors in understanding how innovation can be cultivated into instructing substance and supporting them with the improvement of essential information for TPACK. In order to bolster, educator instruction programs ought to empower pre-service instructors with seen TPACK competences, which allude to what they get almost TPACK interactionally. Mishra and Koehler (2006) demonstrated that it is not sufficient to have information on innovation in joining it into the instruction and learning method. Even though different pre-service trainings point to making a difference, instructors succeed in innovation integration. They must make innovation partitioned from PCK by instructing specific software and equipment. In any case, having satisfactory CK and sufficient TK do not empower teachers to apply their TK to supply the substance effectively (Doering *et al.*, 2009). In this manner, instructors must have the specified CK, PK and TK as well as the capacity to apply the information that will exist among them intuitiveness. Over two decades since the prior arrangement, Koehler and Mishra (2009) included innovation in PCK. At that point, it was constituted as a TPACK demonstration of innovation integration into instruction.

1.1. Content knowledge (CK)

CK is the sort of information that instructors have about the subject matter. In other words, CK is the information of what is instructed. It is composed of speculations, terms, thoughts, and developments (Shulman, 1986). In other words, CK is alluded to as the information around the learning of understudies, strategies of instruction, a number of hypotheses in instructional method, and appraisal of students' learning in a subject matter instructing with no references to the substance. Hence, this kind of information may be a so-called knowledge of techniques of instructing and hones alongside steady information, the information from various disciplines that can improve teachers' approach connected to their education and learning of the subject matter.

1.2. Technological content knowledge (TCK)

Mishra and Koehler (2006) defined Technological Content Knowledge (TCK) as the interplay between technology and content, highlighting the influence of technology on educators' understanding of subject matter. Koehler, Mishra, and Yahya (2007) stated that this domain necessitates a robust foundation in content knowledge (CK) and the ability to teach that content through technology. Subsequently, educators must deeply understand their subject areas and the tools that can enhance student learning. TCK is particularly significant in the context of teaching geometry, as it enhances the learning experience and provides various forms of representation. Moreover, Cox (2008) described TCK as the understanding of innovations employed within specific disciplines and how these technologies reshape the content of those disciplines by creating and

representing new knowledge. While this definition provides clarity, it requires greater specificity compared to the previous one. In various TPACK studies, aspects related to TCK were often not distinctly separated from educational components, which has led to TCK not being acknowledged as an independent figure. Archambault and Barnett (2010) consolidated academic terminology within TCK, resulting in a conceptual overlap with Technological Pedagogical Knowledge (TPK) and Technological Pedagogical Content Knowledge (TPACK). Chai *et al.* (2011) included four TCK elements in their study; two of these were associated with the primary subject matter, while the other two were similarly referenced concerning a secondary subject matter. Shahn (2011) identified four TCK elements, three of which pertain to academic concepts, including lesson planning, instructional methods, and classroom activities.

1.3. Pedagogical content knowledge (PCK)

Schulman (1987) described content knowledge as the application of particular subject matter in teaching, while pedagogical content knowledge (PCK) varies across different subjects, as it necessitates the integration of both subject knowledge and instructional methods (Schmidt *et al.*, 2009). A teacher possessing pedagogical content knowledge (PCK) is expected to be adept at designing and implementing the subject matter to be taught (Mishra & Koehler, 2006). In other words, this type of knowledge encompasses both content knowledge and pedagogical strategies, which are utilized to assist learners in comprehending the specific content. In English language teaching, pedagogical content knowledge (PCK) refers to specialized knowledge that is utilized in language instruction and learning. It also serves as a tool to represent EFL in the classroom, enabling English learners to comprehend the language within a practical teaching context. PCK is valuable in examining the challenges students encounter and the methods that support learners in addressing these issues, considering various factors relevant to their language learning concerns, such as assessment practices and instructional resources.

2. Literature review

Numerous scholars in non-Vietnamese contexts have conducted numerous research projects on TPACK, as outlined briefly below, detailing the sources, methodologies, and main findings of these studies. Subsequently, a synopsis is presented, identifying the deficiencies the present study aims to address.

An investigation conducted by Graham, Borup, and Smith (2011) sought to employ the TPACK framework in examining the decision-making processes of pre-service teachers pertaining to the incorporation of ICT in their instructional methodologies. Out of 137 elementary teacher candidates enrolled in four sections at Brigham Young University, 133 agreed to participate in the study. The participants completed pre- and post-course assessments and undertook three design tasks as part of an educational technology course conducted online in the first week. Before conducting

these tasks, participants were required to express their strategies for teaching essential curriculum standards using technology. The researchers examined the students' justifications, organizing them into themes related to different knowledge domains, including content knowledge (CK), pedagogical knowledge (PK), and the intersections of TPACK constructs. The findings indicated that the participants' technological knowledge (TK) remained constant, whereas there was a significant rise in both content knowledge (CK) and pedagogical knowledge (PK) levels.

Nordin, Davis, and Ariffin (2013) carried out a study to investigate the pre-service teachers' perceptions of their technological pedagogical content knowledge (TPACK) levels before and after their field experiences in educational environments. The study aimed to ascertain if there was a statistically significant alteration in TPACK levels following the practical experiences employing a TPACK scale derived from the research of Schmidt et al. (2009). According to Guillaume and Crippen (2009), a study was conducted with 107 student-teachers participating in a university program in New Zealand. These participants completed a scale both before and after their field placements, as outlined in Archambault and Crippen's (2009) research. Furthermore, a subset of three participants underwent in-depth interviews at both time points. The results indicated that the participants demonstrated the highest levels of content knowledge (CK) and the lowest levels of technological knowledge (TK) at both stages. Paired-sample t-tests indicated statistically significant enhancements in TK, Pedagogical Knowledge (PK), Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), and overall TPACK. The analysis of interview data and observations revealed that participants underwent significant changes in their TPACK levels, which were strongly influenced by their school experiences. The authors suggest conducting comparative surveys to enhance teachers' preparation for their responsibilities within Malaysian middle schools.

The incorporation of information and communication technology (ICT) in educational strategies has become a prominent area of emphasis in contemporary pedagogical approaches. Lin, Tsai, Chai, and Lee (2013) conducted a study investigating teachers' attitudes towards integrating technology into their teaching practices, focusing on their Technological Pedagogical Content Knowledge (TPACK). The study included 222 teacher candidates and in-service educators in Singapore, utilizing structural equation modeling to examine the seven components of Technological Pedagogical Content Knowledge (TPACK): Technological Knowledge (TK), Content Knowledge (CK), Pedagogical Knowledge (PK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and overall TPACK. The findings revealed a positive correlation between technological pedagogical content (TPC) and multiple dimensions of Technological Pedagogical Content Knowledge (TPACK). The results indicate that female educators showed higher confidence levels in their pedagogical knowledge (PK) than male educators but lower confidence levels in their technological knowledge (TK). Furthermore, a notable inverse relationship was observed among the

perceptions of female in-service teachers regarding TK, TPK, TCK, and TPC, specifically with regard to their age.

The study by Maeng, Mulvey, Smetana, and Bell (2013) examined the implementation of technology-enhanced inquiry instruction and the development of technological pedagogical content knowledge (TPACK) among secondary school science teacher candidates. Before their teaching experiences, twenty-seven pre-service teachers were provided with comprehensive guidelines designed to integrate technology into science instruction as part of a two-year Master of Arts in Teaching program centered on educational reform. During their student teaching, twenty-six of these participants engaged in using technology for inquiry-based instruction. Data were gathered from multiple sources, including observations, lesson plans, interviews, and reflective writings, which demonstrated how the participants incorporated technology to enhance inquiry instruction and guided their decision-making regarding the technological tools used. The findings indicated that the participants' utilization of technology was effectively aligned with both the content and context, facilitating both non-experimental and experimental inquiry experiences. Their technology use was marked by selectivity and appropriateness, featuring engaging introductions, support for data collection and analysis, and the enhancement of communication and negotiation of results, all of which contributed to their TPACK development. Additionally, the utilization of digital images to support whole-class inquiry was recognized as a notably effective strategy for teachers involved in inquiry-based instruction. The results emphasized the significance of science teacher educators' development of content knowledge (CK) and technological knowledge (TK) in preparing teacher candidates for technology-supported inquiry instruction, thus promoting a shift towards student-centered teaching and improving TPACK development.

Banas and Yerk (2014) conducted a survey study that investigated the effect of authentic learning exercises, particularly strategy instruction, on the self-efficacy of student-teachers in relation to technology integration and their intentions to integrate technology into their teaching practices. The findings demonstrated a predictive relationship between changes in self-efficacy regarding technology integration among teacher candidates and their resultant intentions to incorporate technology. The study comprised a sample of 104 teacher candidates participating in a professional preparation methods course. The perceived self-efficacy in technological knowledge (TK), pedagogical knowledge (PK), technological pedagogical knowledge (TPK), pedagogical content knowledge (PCK), and technological pedagogical content knowledge (TPACK) emerged as key factors impacting technology integration. A paired samples t-test showed significantly high scores, with pedagogical content knowledge (PCK) being the most prominent among all TPACK self-efficacy measures and intentions for technology integration. Furthermore, multiple regression analysis indicated that changes in self-efficacy related to technology integration were predictive of shifts in intentions, particularly regarding technological knowledge.

Lee and Kim (2014) conducted a survey research project aimed at developing a model for instructional design to enhance the TPACK (Technological Pedagogical Content Knowledge) learning of student-teachers in a course focused on the integration of multidisciplinary technology. This model was later utilized to evaluate its effects in a teacher-candidate education setting, encompassing the involvement of fifteen pre-service teachers from various fields. The researchers collected data using various methods, including written materials, TPACK questionnaires, collaboratively created lesson plans, and field notes. The results indicated that the pre-service teachers encountered difficulties in understanding pedagogical knowledge (PK), showing that their TPACK learning was marked by a blend of knowledge types rather than a unified integration of PK, technological knowledge (TK), and content knowledge (CK).

Oz (2015) conducted a mixed-methods study to assess the technological pedagogical content knowledge (TPCK) of English as a foreign language (EFL) teacher candidates, which included 76 university students enrolled in an English language teaching (ELT) program at a Turkish state university. Participants were recruited and requested to complete the TPACK scale anonymously, along with answering several open-ended questions. The findings revealed a significantly elevated level of TPACK among the candidates. A gender-based analysis indicated that female participants scored higher in the technological knowledge (TK) and pedagogical knowledge (PK) dimensions of TPACK. Furthermore, the qualitative analysis indicated that faculty members exhibited a higher utilization of TPACK compared to cooperating teachers. The study found that integrating content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK) within a modern teacher education framework, especially in a technology-rich setting for language learners, significantly improve the quality of instruction.

Akman and Guven (2015) conducted a study examining the monitoring methods of 113 social studies teachers and 919 pre-service teachers, with a focus on their self-efficacy concerning TPACK, using a scale developed by the researchers. The analysis utilized structural equation modeling to ascertain consistency index values, while data classification and analysis were conducted using the SPSS and AMOS software programs, respectively. The findings indicated that the relationships between various components and teachers' technological knowledge (TK), as well as student-teachers, were generally low to moderate, whereas the correlation between content knowledge (CK) and pedagogical knowledge (PK) was significantly stronger. Consequently, the integration of PK and CK among social studies teacher candidates and practising teachers was found to be significantly established.

Nordin and Ariffin's (2016) study provided empirical support for the TPACK framework as a tool for enhancing ICT integration in teaching and learning within a Malaysian secondary school context. Employing a case study approach, the researchers collected data from a survey of 150 student-teachers at a Malaysian university. The findings demonstrated that the measurement model corresponded effectively with the data obtained from the secondary school, confirming the validity of the adapted TPACK

instrument utilized in the study. However, it was observed that participants displayed confusion regarding the distinctions among PCK, TPK, TCK, and TPACK, indicating that pre-service teachers found it challenging to differentiate between technological knowledge (TK) and pedagogical content knowledge (PCK).

According to the research conducted by Luik, Taimalu, and Suviste (2017), it is crucial to acknowledge the important role that quality teacher preparation plays in preparing educators to meet the needs of twenty-first-century students in teacher training institutions across different countries. In addition to pedagogical skills, it is essential for teachers to be proficient in integrating technology into their instructional methods to improve the effectiveness of their teaching. Numerous studies have been conducted on the TPACK framework. In Estonia, a TPACK measurement instrument was created to evaluate pre-service teachers' perceptions of TPACK. The results indicated that although pre-service teachers showed proficiency in incorporating technology into their teaching, they displayed a lack of pedagogical knowledge (PK) in their instructional practices.

Research on Technological Pedagogical Content Knowledge (TPACK) has significantly grown in recent years. Nevertheless, there is a lack of qualitative studies investigating English as a Foreign Language (EFL) teachers' viewpoints on Content Knowledge (CK), Technological Content Knowledge (TCK), and Pedagogical Content Knowledge (PCK) in Vietnam. This research aims to address this gap in the literature.

3. Material and Methods

To investigate the research question "What are EFL teachers' perspectives of CK, TCK, and PCK?", interviews were conducted with the participation of ten interviewees. In order to get responses from the participants that could address the research questions, the researcher conducted interviews with them. The researcher and the respondents engaged in what is known as "*creation of collaborative effort*" during the asking and answering exchanges (Fontana & Frey, 2008). Three out of seven clusters of **the** TPACK framework adapted by Mishra & Koehler (2011) were employed to negotiate the participants' CK, TCK, and PCK. Interview data is based on selective interviews with participants with many experiences in pedagogy and technology used within their English teaching practices. The interview data below, which were collected from their perspectives on CK, TCK, and PCK, were illustrated and expressed in various ways.

4. Results and Discussion

4.1. Content knowledge

Very few participants agreed that the integration of content into teaching English is good, but they recognized its importance and necessity in their teaching work.

> *"With the content knowledge available in the textbooks, it sometimes does not fit the teaching and learning context, so the teacher should know how to adapt it to suit the*

learners' conditions. It is to provide the students with popular knowledge necessary for their lives and learning. From my point of view, that is the incredible benefit of integrating such knowledge into the lessons."

Nearly all of the participants showed that integrating content into the lecture was a problematic action in their teaching for many reasons. The first one did not feel he could do it all the time but indicated his effort.

"I am not sure, but I try to do that as much as possible. All I need is to provide students with new words and grammar for their exams. However, when I come across a lesson that contains some content related to their real life, I will try to scaffold it in a good way so that they can practice speaking English and become confident in sharing what they think. Beside grammar, vocabulary and linguistic knowledge, content knowledge is very important in learning English in particular and in learning foreign languages in general. Being provided with content knowledge, learners can develop their ideas for speaking and writing. Clearly, in my teaching context, most English reading texts go beyond students' living environments, so it is hard for them to acquire it. For example, the students live at a Vietnamese city, while the reading texts cover London city, where they feel unfamiliar with themselves. As a result, it does not attract their attention because it is not interesting enough."

Similarly, another participant showed his agreement on integrating content knowledge into his lecture in class to expect for its effect. Although he recognized the importance of content in teaching and learning English, he showed some obstacles he encountered during his work.

"There are not many opportunities to integrate CK into the lesson because the time is limited. Especially many students of different levels have their own acquisition, so it depends on how familiar the topic is, a teacher will decide whether she/ he will do it. In my opinion, it is difficult to include CK in teaching English because of students; habits in learning for exams. If possible, the integration of CK, grammar and vocabulary is good for them when they need idea development in English communication, including speaking and writing. Undoubtedly, CK plays an important role in my English teaching. If the content is very unfamiliar to the learners, they will feel bored with reading it. On the contrary, it is better to adapt it to the teaching and learning context where they are living."

Sharing the same ideas, his colleague also explained that despite its goodness, content integration sometimes made the learner feel fed up with it. Anyway, he never denied the necessity of using technology in his teaching.

"CK is entirely necessary to integrate into the lessons, especially when it is close to the living environment of the students. It is easier for them to swallow the lesson and remember

the presented lesson longer because they have a chance to apply the knowledge in their places every day. It is to provide the students with background knowledge that is important to use in real life. For example, through English, a teacher can provide students with knowledge on how to play soccer, swim or write an academic essay. An old saying rings true: "one stone kills two birds" because the learners are equipped with both at the same time. In my teaching practice, sometimes, reading texts does not influence my instruction when I only teach grammar and vocabulary to my students. What they need is structures from sentences in the texts, so I spend most of my time analyzing the sentence structures for them. In fact, they got high marks in grammar and vocabulary section."

Some of them found it hard to integrate content efficiently because of time limits. Her answer is illustrated as follows:

"Although limited time in each period hinders my integration of content into the lesson, I make greater attempts to do it as much as possible. Since I started learning English, I had realized that I did not have many ideas when I wanted to express my thoughts in English. Thus, I expect to apply it when I become a teacher. Up to now, I have found it difficult to do well, but I will learn from my accumulated experience day by day. I believe that I will be successful in integrating content knowledge into the lessons so that my students can feel confident in their written and oral communication. It is very useful because it helps the students widen their knowledge in many areas. The more content knowledge they are provided, the more effectively they can communicate in both speaking and writing because they have many ideas to develop during those processes."

Another participant also expressed his perspective on this issue as follows:

"I strongly believe that integrating CK into the lessons is hard work because it takes a long time. It also depends on how familiar the content is in case it is very strange to students' background knowledge. If the learners can familiarize themselves with the content, I will deepen by discussing it further so that they can get much more knowledge in class, irrespective of the limited time. To illustrate, both linguistic knowledge, such as vocabulary, sentence structures, grammar and content knowledge in the reading or listening, will be selected carefully and transmitted to the learners as much as possible. When CK is incorporated, the amount of knowledge provided for the students will become diverse and various in subjects and fields. It also inspires those who are keen on discovering new things, which motivates them to go further in their learning path."

Similarly, their colleagues felt that the time period was not long enough to provide their students with content knowledge in an effective way.

"I know that CK is necessary to integrate into the lessons, but I am not sure I will usually do it because the length of a period is limited. In addition, the students can hardly swallow

both lesson content and linguistic knowledge like grammar and vocabulary effectively at the same time. However, I recognize the benefits of content knowledge until I have enough time to integrate it into the lessons I teach. I think that, like other English teachers, lesson content provision becomes useful to the students when it is connected with their surrounding living environments because it is a good time for them to apply theoretical knowledge to real life. A teacher usually takes much time to adapt the reading texts to suit the learners' learning context because not all students have the same levels. That is due to their various origins and family backgrounds as well as living and learning conditions."

Another respondent showed his hesitance in response to this question, followed by the learners' level of acquisition and background knowledge. She stated:

"In integrating CK into the lessons depends on students' levels and teachers' knowledge as well as skills. It means that both should be coordinated in a harmonious way to ensure that teaching quality and its effect as well. In my opinion, when CK is integrated into the lessons, that period will become much more varied and attractive because the students are provided with knowledge in a diverse angle that may help each of them adapt to the learning context. Sometimes, the reading texts contain contents that are at a higher level than that of the learners, so it is difficult for them to acquire and have a full understanding after class due to their different levels and backgrounds. In order to tackle it, the teacher must attempt to scaffold it to suit their students' levels. It may take a teacher much time and patience to overcome it. In general, not all the students can have a good ability to understand fully the lesson, although it is carefully adapted. Therefore, it is hard to conclude."

There is no denying that the integration of content into the speech wastes much more time than usual. One of the respondents explained as follows:

"I truly feel that if I have much more time, I will integrate it into my lecture. Anyway, when I come across reading texts related to the students' interests, I make a great effort to provide for them. It is true that they show their great interests because it is closely intertwined with their hobbies and living contexts. I remember that when we moved on to a unit related to deforestation and historical places, they applied it to their courses on Geography and History. I am glad to hear that. Obviously, it is hard to integrate content knowledge into the lecture, it is highly beneficial to the learners who make a big sensitivity to attach it to other subjects. In my opinion, that is the best aim that is needed. CK integration is necessary, although sometimes the reading texts for English teaching go beyond the students' background knowledge. Thus, sometimes, it is time-consuming and useless. As a result, a teacher has to adapt it or even replace it with a new one."

In conclusion, although most teachers found it vital to integrate content knowledge into their teaching practice, they also had trouble doing it because of the time limit and their students' acquisition capacity. In addition, their level of content

integration was also covered in this work, especially those with traditional teaching methods that keep much focused on knowledge available in the course books.

4.2 Technological content knowledge

In teaching English, integrating technological applications has been very popular in modern times, and most of the participants showed positive perceptions of the linkage of technology in their English instruction. Three of them shared something similar by recalling their past experience, as quoted below.

> *"I got a moderate degree of technology and content overlap. Thus, my TK and CK is quite good. I am particularly interested in how to integrate technology in support of content which I want to provide for my students. I also strongly believe that technology and content are heavily relevant. For example, I co-operated with a projector in the lab together with PowerPoint to appeal students' attention to the presented lessons. In addition, I created a secret Zalo group for in-depth discussion. In the two examples, she used appropriate technology to discuss the content. It was indicated that technology and content were inseparable relationships."*

> *"Instead of teaching content in a separable way, technology should be used to make it more vivid in teaching. Like other teachers, my periods usually are coordinated with multi-media, such as images, projector and PowerPoint for presentations to teach English. I think these are the most popular tools that are used in today's classes. Besides, I also use video clips to have my students watch and answer the questions or fill in the blanks, depending on specific lessons. In general, there is no denying that integrative teaching can enhance the effects of teaching and learning, especially in the modern age. Incorporating TCK in teaching English is widely used because it benefits from various aspects, such as professional aspects. In order to do that, a teacher must improve and update himself daily to keep pace with the social innovation and progress that has been becoming much more innovative. It is a significant result that the learners seem to be more interested in the lesson thanks to the support of technology. It also increases their creativity and confidence in learning and social interaction."*

In addition to the use of technological devices, as mentioned earlier, the support of technology in English language instruction helped teachers save time and energy during the teaching process.

> *"In my opinion, I find it important to integrate technological application into teaching practice because it is useful to teachers who will be able to give a speech flexibly and creatively. To me, I often assess my students' listening skills by having them listen to the songs and fill in the missing words. In addition, no matter how old they are, using pictures to teach vocabulary is also successful in my class. Specifically, I present some pictures about natural disasters or global-warming-related words so that they can remember words*

in images and develop their imagination. In general, it is more effective to teach English by using technology, such as projectors and computers, that are popular in today's classrooms. Firstly, a teacher can save energy and time by writing down on the blackboard that is usually used in traditional classes. Secondly, the interaction between teachers and students is more varied and convenient, especially when teaching speaking. Lastly, using a video during listening and pronunciation periods is versatile because it will develop an aural sense, enhance their native accent, and observe the mouth movements of speakers who pronounce homophones."

More teaching sources, such as magazines and newspapers, were also widely used and were diverse in approaching the topic because they elicited the learners to gain much more knowledge.

"In modern times, it is good to integrate technological devices to teach English. In class, I spend much time using slides and videos to present the lessons and my students like them so much as a result of the convenience they obtain from those tools. Undoubtedly, technological aids have useful applications in teaching. Not only did it attract the learners' attention, but it also played an important role in motivating their learning spirit both in class and at home. Moreover, it elicits their curiosity in discovering new knowledge in various relevant fields from newspapers, magazines and the Internet."

"This action is of great importance during class periods. Providing students with vocabulary in videos and pictures using PowerPoint and projectors will make the periods more attractive and interesting from the beginning to the end. It also saves teachers the energy they need to write down on the blackboard. Moreover, I am persistent in finding out and learning how to use software to teach grammar and collocations from numerous sources on the Internet. Popularly, technology provides users, especially teachers, with multi-functional effects in teaching. Certainly, the learners will be more attracted to studying. In other words, technological use develops their creativity and curiosity in learning."

Besides using PowerPoint for their work, they also made full use of popular English channels on the Internet as follows:

"I confess that I have a higher interest in technology, but I have less content knowledge. However, I try to integrate TK and CK well into my teaching practices. In the past, I employed cassette recorders for auditory learners. In modern times, I also made use of my school internet connection that was connected via his computer to enable the learners to approach various reliable English listening materials, such as podcasts from the British Council, VOA, BBC as well as CNN for both auditory and visual learners. I am also an enthusiastic technology user who created a Facebook account and a secret English group in which my students were included. The page was used for chatting and asking questions

that the students had not fully understood in class. The examples indicated that I cared for content knowledge that supported technology."

Like her colleagues, she also shared various ways of technology and English content integration in her class, in which some of her students did not feel good at their integration because of personal problems. Anyway, it was recognized to be essential in English language education.

"From my point of view, behind teaching content should be some integration that, in this condition, is technology, such as computer, projector and the Internet, for instance. Let me give you an example in my teaching context. Preparing handouts for dozens of students may take a long time, so I often compose digital stories for teaching writing. To illustrate, I present the stories on the projector monitor, which is attached with images and relevant clips, step by step. All relevant phrases and structures are provided for the learners, followed by my explanations and instructions and ideas for them to avoid getting stuck. Their duties are to write down a new story based on given clues. In fact, with the support of technological tools, the lessons become more interesting. It is also useful in catching learners' attention to the presentation. In general, they feel amiable and have effective acquisition after class. However, some of them have sore eyes because they are near-sighted. Anyway, I do not deny the usefulness of technology in teaching English in particular."

Clearly, two more interviewees demonstrated their skills of technology use together with the integration of content, which made the learners more interested in the lecture, as quoted:

"It seems that if all teachers can coordinate their knowledge on technological use in teaching, the effect and quality of a period will increasingly develop. Simply speaking, when I have my students, in a warm-up activity, to guess word formation through puzzles to help them recall former vocabulary before beginning a new lesson, they feel excited about it because it helps them remember and acquire better. Another example is when I have them surf the Web for some vocabulary related to English classes, they become keen on it because what they have just done motivates their activeness, curiosity and creativity in using keywords during the searching process. As aforementioned, the coordination of TCK in teaching English brings about much benefit to teachers, who may exploit new knowledge to apply to their teaching practice in various forms, and the learners, who may feel interested the topics that happen in their study."

However effective it is, some limits in their integration still exist in their teaching contexts, which wastes time and constrains their competence in knowledge integration of technology and content.

"If we only teach students the content in the course books monotonously, it will be so boring that they neglect the importance of English at school and at work. Therefore, we should integrate technology into teaching them. Let me give you an example. In listening periods, instead of having them listen to the audio, I choose videos for their listening activities to be more vivid. Thanks to the images in the video clips attached, the students may be more attracted, and they can observe the speakers' mouth gestures to guess the meaning as well as the spelling of homophones that they may come across during the listening periods. Another example is that when I want my students to think in English instead of translating from Vietnamese to English before speaking out, wasting much time, I have them watch short videos in a specific situation and practice again and again until they feel confident and speak effectively in spontaneous situations. In conclusion, it is good to attract the learners' interest and attention in class."

"It is always necessary to integrate TCK into teaching. I usually use MS Office and flash animations to make English classes more varied. Furthermore, using the internet and videos for warm activities is implemented daily to make the students feel fun and comfortable for a long time. I think that my colleagues will also have the same ideas. The application of technology to teach students content makes it more interesting and valuable. It is also challenging for teachers to learn more to keep pace with the advancement of innovative technological tools."

In conclusion, most participants showed positive attitudes toward TCK in their English instruction by sharing their experiences. They taught English using various forms of technology, such as PowerPoint, projector, computer, the Internet and diverse sources of English channels. However, some of them did not entirely agree with the high effectiveness of blending technological tools in their teaching practicum as it was sometimes time-consuming. They also demonstrated their challenges in developing low competence and keeping pace with technological innovation.

4.3 Pedagogical content knowledge

In terms of pedagogical and content knowledge, nearly all participants showed good experience. Their level and application to their teaching practices make a class more effective. One of the participants stated as follows:

"I am knowledgeable about the intersection between pedagogical and content knowledge. I am interested in teaching approaches or pedagogy knowledge. I stimulated my students to complete their writing assignments by applying what they learned in class. For example, I have my students write a reflection or discuss a topic by enabling them how to relate theory to practice. In this way, it ensures that students' learning outcomes are enhanced."

Similarly, another teacher expressed the same ideas about what level of PCK he owned and how much he applied in his class.

"Besides vocabulary and grammar, teachers should help learners build content knowledge to become better in a bilingual environment where they will study further and work and communicate in society. I am well-equipped with the level of PCK because I appreciate the pedagogical needs of my students, but I should make a greater effort to motivate those needs. In other words, I considered the content's difficulty and decided to employ pedagogical skills to support it. For instance, I assigned the students to complete group-work exercises on the same topic by dividing with whom all class students worked. In this way, the process of cognition and motivation were involved."

Other respondents were self-confident in her PCK level when they presented how they applied in her teaching. They also revealed the importance of the intersection of pedagogical skills and content knowledge that should be linked efficiently during her teaching process.

"Pedagogy and content have a mutual relationship in teaching practice. Without pedagogical skills, a teacher cannot teach and present the lesson smoothly. Therefore, both should be applied alternatively so that the learners can acquire new knowledge as effectively as possible. For example, to have the learners practice in pair-work and group-work efficiently, a teacher must use his/ her pedagogical capacities to instruct the students as clearly as possible so that they can fully understand all instructions from the teacher. With the good incorporation of PCK in class, the learners also feel comfortable in perceiving the lectures and remembering the content easily."

"Actually, many activities take place in the classroom, such as presenting, discussing and working in groups. Those activities are required to be assessed by a teacher who is equipped with teaching skills from the training program at the university. Those skills are used to evaluate group work in students' speaking activities, for instance. Those skills will help a teacher know how to evaluate learners' abilities by many criteria. Thanks to this, the students' learning outcomes will be clearly reported later."

Using teaching skills to coordinate with subject matter is very useful in teaching and learning English. One of the participants described his experience in more detail to better result in students' learning outcomes.

"As a teacher who sets high requirements for my students, I always want my students to be much better. However, I must consider it carefully before doing it. When a lesson is developed with pedagogical skills and content knowledge, it will possibly be more vivid and more interesting for the students. In order to provide further my students with social knowledge, I select and introduce medium-level reading papers from popular journals, such as The Economists, New Scientists, etc, to my students and have them research English subjects in those journals by instructing them how to read and take careful notes in such a way that they can understand new words in context before checking by looking them up

in a dictionary. In conclusion, pedagogical skills are important to a teacher to transmit lesson content to the students. By incorporating PCK, the students will feel the importance of the lessons through how to present that a teacher uses in class. The extent to which the students learn the lessons is also dependent significantly on their teacher's way of transmission. Thanks to my attempts to make a harmonious application of pedagogy and content to the lessons, the students become interested in reading in particular and in learning English in general. To me, teaching English is not my job, but it is my passion. As long as my students can follow my instruction and do well, I will feel good."

Another attendant expressed his PCK linkage in English instruction interestingly when he tried to link it with different science subjects. This helped him make a big difference from his colleagues who just concentrated on English knowledge.

"I apply my pedagogical ability in a creative way by having them use those new words to translate any lessons in other subjects, such as History, Biology and Geography, into English. By doing so, although it seems different from my other colleagues, I receive constructive feedback from my students. This helps them reinforce English vocabulary and memorize their lessons in science subjects. In order to do that, the students are taught and introduced to online dictionaries such as Oxford. It is necessary to incorporate pedagogical capacities to teach English, particularly to equip the learners with the best way so that they can remember the lessons faster and longer."

One more interviewee addressed his thoughts in a normal way when he was asked about how he experienced his PCK in the lecture. The following excerpt illustrates his words.

"From my point of view, there is nothing special in integrating PCK into the lessons. After completing a lecture, I assign the students to do a 15-minute test. In order for them to check and self-evaluate which marks they may get, I use some criteria that need much thinking energy to write down and assess their results. However hard it is, using specific criteria in assessing the students' learning outcomes is compulsory in instruction because it is crucial to qualify their levels clearly."

By applying theory to practice to reinforce what they had taught their students, they attempted to give them more opportunities to discuss further for in-depth understanding after class.

"Without pedagogical ability, no matter how experienced a teacher is, she cannot give a lecture attractively to the learners. Thus, it is important to apply it flexibly in English instruction. After every presentation, I try to provide my students with examples of how they can apply English to their real-life activities. To illustrate, I usually use a task-based approach to teach my students. All I need is that them can do the given activities well

under my clear and detailed instructions. It shows how professional a teacher is in her teaching practices. Furthermore, the learners may feel attracted to the lecture and better understand it before going home. However, I do not know why some of my colleagues confirm that they forget expert knowledge. However, I realize their longer teaching experience attracts the students more than younger ones when observing their classes. I am confused."

"The pedagogical skills are dispensable for teaching, especially in explaining grammar points to the learners. In other words, pedagogical capacity enables teachers to know about making concepts easy for the learners to understand. In teaching English, teachers' pedagogical knowledge can help the students better understand the given lectures easily in class. Nevertheless, the more experience a teacher has, the more attractive the students will be, although it is not always true in teaching."

Using teaching approaches to teach reading, students were provided with knowledge available in the course books. Undoubtedly, the pedagogical ability he applied to his lecture was very effective for the studious students.

"In my opinion, using suitable approaches to teach and fit specific content is necessary. It is extremely needed in teaching. For example, in using stories to teach my students reading and speaking skills, I must, somehow, provide them with reading strategies, such as top-down and bottom-up, and phrases or necessary expressions so that they can have ideas to use. It is concluded that applying pedagogy and content in transferring knowledge to the students should be flexible and effective. There is no denying that a teacher is trained with the pedagogical capacity to use teaching practices in such a way as to catch the learners' interests and attention. It depends on his/ her application skills in English instruction."

In conclusion, most teachers showed self-confidence in integrating pedagogical skills to teach their students content in English classrooms where many approaches, techniques and methods are efficiently used. In other words, there is no denying they revealed their success in linking the two kinds of knowledge in their English instruction.

5. Recommendations

The study presents the research implications and provides recommendations. Future research should be conducted in a broader context, including a STEAM environment. Furthermore, future research should explore teachers' viewpoints across various dimensions, including their areas of specialization, workplace environments, educational backgrounds, and personal interests. Another recommendation is to conduct comparative data analysis on TPACK between teachers working in high schools and English language centers, where the environment is perceived to be more flexible. Further research should be conducted utilizing convenience sampling techniques.

Data obtained from interviews indicated that factors such as time constraints, time management, and students' learning abilities significantly influenced the integrating of technological pedagogical content knowledge (TPACK) into teaching practices. Specific pedagogical implications may be considered to improve the quality of English language instruction and acquisition within a research setting. It is imperative to improve teaching conditions to enhance the more effective integration of technology into English language teaching. Secondly, integrating technology, pedagogy, and content knowledge (TPK) is time-consuming. Hence, educators are advised to enhance their time-management abilities in the professional setting. Facilitating teachers' integration of technology into their instructional practices is essential, as it allows them to engage with new technological tools. Achieving a balance between pedagogy and technology in higher education is essential for teacher candidates, who may benefit from guidance provided by teacher educators. Relying solely on digital devices without proper guidance does not adequately prepare student teachers to effectively integrate technological skills into their coursework at the university level. The issue of teachers' inadequacy in applying technology and pedagogy is a contentious topic. It is recommended that they have increased opportunities to participate in annual training workshops to enhance their professional development in education and ICT skills.

6. Conclusion

Data analysis from interviews with experienced educators revealed that integrating TPACK into English teaching practices is perceived as time-consuming and hindered by constraints such as time limitations and students' learning capacity. Furthermore, this study also addressed the extent of content integration among educators, particularly those employing conventional teaching approaches that prioritize textbook information. Utilizing different forms of technology, including PowerPoint, projectors, computers, the internet, and various English resources, determined that there continues to be a lack of effectiveness in integrating technological tools during teaching practicum. This is attributed to the time-consuming nature of the process and the challenges observed in participants who struggle to keep up with technological advancements due to their limited competence. Most teachers demonstrated confidence in incorporating pedagogical skills to deliver content to students in English classrooms, where various approaches, techniques, and methods are effectively utilized. In conclusion, it is undeniable that they have demonstrated success in integrating both forms of knowledge in their English teaching. The current research affirmed the conclusions regarding time management in integrating TPACK clusters, which align with the findings of Nordin, Davis, and Ariffin (2013). Another promising discovery was that teachers' self-confidence in integrating pedagogical skills to teach content in English classrooms aligned with Banas and Yerk's (2014) findings. This finding is significant in enhancing the comprehension of Pedagogical Content Knowledge (PCK) in the context of English language instruction.

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