



A REVIEW OF THE LITERATURE ON THE DEVELOPMENT OF ENGLISH INSTRUCTORS' TPACK IN INDONESIA

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Abstract: In this twenty-first century, It is essential that English instructors continually build their TPACK to improve language teaching and learning. Research on the development of TPACK in Indonesia has been in great demand by academics and researchers. Therefore, the purpose of this study is to give a thorough synthesis of the reported outcomes of Indonesian English instructors' TPACK development. The evolution of TPACK for English teachers is examined in this literature review, which is structured circa five disparate research techniques (self-report measures, open-ended questionnaires, performance assessments, interviews, and observations). In order to do this, a search in 2011–2021, Education Research Information Center (ERIC), Taylor and Francis, and Library Genesis databases was carried out. Eight studies were deemed appropriate for analysis in the current study after criteria were applied to publications retrieved from the databases. There was a three-level analysis done. The first was a study-level analysis focused on each study's overall features. The second method analysis concentrated on the research tools and target audience. The final one provided a summary of the study findings through the literature to show the outcome of Indonesian instructors' TPACK development. The results of this present study gave an overview of the research techniques and the result on TPACK development. Additionally, this study also demonstrated an upsurge in publications regarding TPACK development among English instructors in Indonesia.

Keywords: English Instructors, Indonesia, TPACK Development

Abstrak: Di abad kedua puluh satu ini, Instruktur bahasa Inggris sangat perlu terus membangun technological pedagogical and content knowledge (TPACK) mereka untuk meningkatkan pengajaran dan pembelajaran bahasa. Penelitian tentang pengembangan TPACK di Indonesia banyak diminati oleh para akademisi dan peneliti. Tujuan dan maksud penelitian ini ialah memberikan sintesis menyeluruh dari hasil yang dilaporkan dari pengembangan TPACK instruktur bahasa Inggris. Evolusi TPACK untuk guru bahasa Inggris diperiksa dalam tinjauan literatur ini, yang terstruktur di sekitar lima teknik penelitian yang berbeda (ukuran laporan diri, kuesioner terbuka, penilaian kinerja, wawancara, dan observasi). Untuk melakukan ini, pencarian di 2011-2021, Pusat Informasi Penelitian Pendidikan (ERIC), Taylor dan Francis, dan database Library Genesis dilakukan. Delapan studi ditentukan sesuai untuk analisis dalam studi saat ini setelah serangkaian kriteria diterapkan pada publikasi yang diambil dari database. Ada tiga tingkat analisis yang dilakukan. Yang pertama adalah analisis tingkat studi yang berfokus pada fitur keseluruhan setiap studi. Yang kedua adalah analisis metode yang berkonsentrasi pada alat penelitian dan target audiens. Yang terakhir adalah memberikan ringkasan temuan penelitian dari literatur untuk menunjukkan hasil pengembangan TPACK instruktur Indonesia. Hasil penelitian ini memberikan gambaran tentang teknik penelitian dan hasil pengembangan TPACK. Selain itu, penelitian ini juga menunjukkan peningkatan publikasi tentang pengembangan TPACK di kalangan instruktur bahasa Inggris di Indonesia.

Kata Kunci: Pengajar Bahasa Inggris, Indonesia, Pengembangan TPACK

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INTRODUCTION

Modern technology is developing quickly nowadays, posing new challenges in a range of professional contexts and settings, including education. New technologies are transforming the educational scene, which is inevitable and unavoidable (Koehler et al., 2013). One of the skills that students in today's era must master is proficiency in information, media, and communication ability in technology (Larson & Miller, 2011; Griffin & Care, 2015). Creating lessons that encourage learners to acquire twenty-first-century competencies is a significant problem for teachers today (Baser et al., 2016). Technology frequently has requirements that affect the subject matter that must be covered and the variety of viable representations (Mishra & Koehler, 2006). Further, to create a conceptual framework for understanding TPACK (technological pedagogical content knowledge), offering a common terminology to discuss technology, teaching, and learning to address these issues (Mishra and Koehler, 2006). It is focused on how content, pedagogy, and technology link mutually as well as their shared qualities, connections, and constraints (Mishra & Koehler, 2006).

The base of teacher competencies and knowledge needful for effective teaching by incorporating elements of technology are described by the TPACK composition (Mishra & Koehler, 2006; Koehler & Mishra, 2008). It is also used as a skeleton for assessing teaching knowledge and sundry pre and in-service teacher training and for enhancing professional experience development (Schmidt et al., 2009). Since then, many who are interested in the intersection of teacher education and technology have tried to include the concept in their courses and further created metrics to assess teachers' TPACK progress (Wang et al., 2018). Tokmak (2013) claimed that aspiring preschool teachers were taught how to utilize blogs, chat programs, YouTube, and e-mail. After using technology to create materials and messages for computer applications to teach young children, most preschool teacher applicants' reluctance toward technology integration was afterward altered. Then, the TPACK assessment (35 survey items) was a legitimate and reliable device for quantifying how EFL learners perceived their teachers' TPACK (Tseng, 2016).

According to Cheng (2017), teachers may be inspired to reevaluate their utilization of ICT in the classroom as a result of the reflection on their education in technology is improved from the angle of TPACK. In China, while instructors believe that Assessment Class Participation (ACP) is important and has favorable effects on student enthusiasm, engagement, and language acquisition, they are unsure of the ACP criteria and feel that they require assessment training (Xu & Qiu, 2020). A "good" TPACK score was achieved by English teachers in Pekanbaru, which is located in the western region of Indonesia (Mahdum, 2015). It can be a sign that teachers haven't been exposed to much technological knowledge. Therefore, to ameliorate language learning and teaching, it is necessary that teachers continually build their TPACK, particularly in subdomains connected to technology. Sari et al. (2021) stated that teachers could use reflection as an effective tool to help them draw adaptable conclusions about their instruction. The EFL teachers used tales about their use of technology to conduct their reflection, which raised their awareness of their teaching methods and inspired them to take action to improve

them. From the studies above, it can be seen that research on the development of TPACK in Indonesia has been in great demand by academics and researchers.

In the last few years, several investigators have emphasized combining technology with Shulman's concepts of PCK and Mishra and Koehlers' concepts of TPACK for the expansion of the TPACK skeleton, such as Pierson (2001); Baser et al. (2016); Vaerenwyck et al., (2017); Nazari et al., (2019); Schmid et al., (2021). In order to use technology in the classroom responsibly, the TPACK framework strongly emphasizes providing teachers with the information and skills they need. Notably, the framework accepts diverse educational methods for teaching and learning and does not demand a particular pedagogical perspective (Harris & Hofer, 2011). The purpose of certain literature studies, such as (Oktalia & Drajadi (2018); Prasojo (2020), was to give academics in the area a depiction of how the framework has changed, how it may be used in the construction of TPACK in English pre and in-service teachers, and what research techniques were employed to measure TPACK.

Oktalia & Drajadi (2018) used the TPACK model and Google sites as the media to convey the listening materials, and the study examined EFL teachers' perceptions of using text-to-speech software in creating listening materials. The individual interview technique was used in this investigation, and eight EFL teachers were involved in this study as participants. The results demonstrate that EFL teachers support integrating the text-to-speech software utilizing the TPACK methodology. EFL teachers believed that using this digital technology to aid in language learning was effective. Prasojo (2020) elaborated on the TPACK comprehension of EFL in-service teachers, and the findings show that teachers lack technical skills but believe their pedagogical understanding is sufficient. Age and gender differences in perceptions were also discovered. The findings regarding the previous TPACK literature review show clearly that studies on TPACK developed in various contexts in education as a reference for academics to assist teacher knowledge growth in the context of instructors. Therefore, it is worthwhile to look up the literature on the current level of TPACK development among Indonesian instructors. This literature review aims to give a composed synthesis of the methods utilized to assess and report the development of TPACK among English instructors in the literature.

Investigating the TPACK growth of English instructors in Indonesia using researchers' approaches is crucial. Additionally, the researcher plans to look for English instructors' TPACK development through a review of the literature because there aren't many studies asking how researchers in the field of English instructors' TPACK development in Indonesia, to fill the gap in this field. This study concentrated on the research methodology on technology pedagogical content knowledge of Indonesian English instructors from 2011 to 2021 with these questions: 1) How much did Indonesian researchers contribute to the study of TPACK development for English instructors between 2011 and 2021? 2) How did the visualization results of the research methods of English instructors' TPACK development in Indonesia?

This article aims to summarise the literature (written between 2011 and 2021) that discusses how teachers developed their TPACK. This literature review was to examine the development of TPACK among English instructors. The five study approaches

developed by Koehler et al. (2008) were used to compile findings from this literature synthesis, such as; open-ended questionnaires, self-report measures, performance-based evaluations, interviews, and observations. A brief overview of TPACK is then given to discuss this conceptual skeleton linked to instructors' knowledge and context, together with information on how it has evolved and summaries of earlier assessments of the relevant literature.

LITERATURE REVIEW

Shulman (1986) expanded the theory of pedagogical content knowledge (PCK), according to which was hereafter expanded by Mishra & Koehler (2006), known as technological pedagogical content knowledge (TPACK), which offers a common language for discussion regarding teaching, learning, and technology. The focus is on the framework's relationships, characteristics, connections, and barriers amongst content, pedagogy, and technology. It underlines how important it is for teachers to show that they can integrate technology into developing content and pedagogical domains. The figure below illustrates the TPACK concept (Mkoehler, 2012).

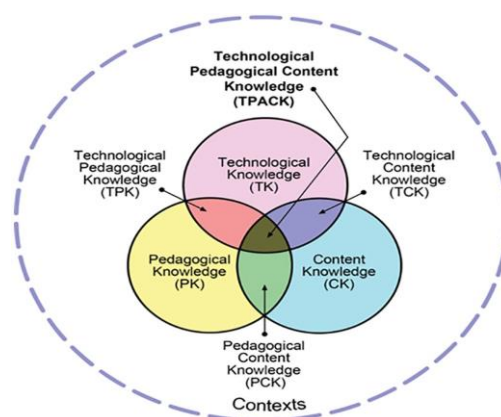


Figure 1. The TPACK concept

From the figure above, it is clear that TPACK is born from the association of TK, PK, and CK. Furthermore, it produces 4 new pieces of knowledge, namely PCK, TCK, TPK, and TPACK. TK is aware of sundry types of technology as tools, resources, and processes. Next, PK is knowledge of theoretics and practice in learning design, processes, and evaluation. Meanwhile, CK is knowledge concerning the subject matter or content regarding teachers learning and teaching students. PC is pedagogical knowledge related to specific content. TC is about the interrelationships between technologies and content. TPK is the awareness of miscellaneous technologies that can be utilized to relieve learning and teaching. TPACK is knowledge concerning the appropriate use of technology in the pedagogical suitable to educate content well (Shulman, 1986; Mishra & Koehler, 2006; 2008; Koehler & Mishra, 2009; Koehler, Mishra, & Cain, 2013; Dong et al., 2015; Turgut, 2017). The seven knowledge sections described previously should be mastered for future educator candidates who will educate in a learning ecosystem full of student technology tools. So it takes teachers who can use technology appropriately and adequately in pedagogics.

RESEARCH METHODOLOGY

Research Design

The research method utilized in this qualitative study is library research, which entails reading articles from various sources pertinent to creating TPACK for English teachers in Indonesia. A literature study is a technique for gathering data through a review study of books, reports, and notes connected to the issue being resolved (Nazir, 2009). The literature study attempts to present the state of science today by providing a systematic account of the literature review and the findings of earlier studies relevant to the research.

Research Procedure

This study of the literature aims to comprehend the work that the TPACK study community has done to look at how English instructors' TPACK has developed in Indonesia. The review contributes to a large body of TPACK studies by (a) Analyzing the sundry research methodologies utilized to assess instructors' TPACK movement by Koehler et al. (2012); Schmidt et al. (2009); Harris et al. (2010); Sahin (2011); Chai et al., (2013); Baser et al., (2016). (b) Offering a synthesis of the study results through the literature to present the quantified outcomes on instructors' TPACK movement in Indonesia. The exploration for literature reviews was performed at Education Research Information Center (ERIC), Taylor and Francis, Library Genesis. The search terms used were; TPACK, technology pedagogical content knowledge, and English.

Research Participants

The reference register in these sources of data was cross-checked, and a master reference list of articles explicitly discussing the development of TPACK for English instructors in Indonesia was formed. Following the initial search, 364 articles in total were found. After compiling all articles using the aforementioned model strategies, each research project was evaluated using the following inclusion qualification items: the study's primary objective was to measure English instructors' content knowledge (TPACK) in Indonesia; the study involved empirical (qualitative or quantitative) research was published between 2011 and 2021.

Data Collection

Since this research was conducted in library research, the technique employed to gather the data was gathering literary data or items that were consistent with the subjects under discussion. The data is treated by: reexamining the data obtained; organizing the collected data with the required framework; perform additional analysis on the results of organizing data using predetermined methods, theories, and rules so that answers and conclusions are generated from the formulation of the problem.

Data Analysis

In literature study, data analysis takes the form of content analysis, a research technique that considers the context to produce legitimate data that can be replicated. The researchers did the following actions during the content analysis process: identifying the issue, creating a mental model, creating coding sheets and a methodical set of several data collection techniques, data analysis, and data interpretation.

FINDINGS AND DISCUSSION

Findings

English Instructors' TPACK Development in Indonesia

The findings from the literature review for methodological research categories by Schmidt et al. (2009); Harris et al. (2010); Sahin (2011); Koehler et al. (2012); Chai et al. (2013); Baser et al. (2016) of TPACK research (self-report measures, open-ended questionnaires, performance assessments, interviews, and observations), are shown in this part. Each category's findings are summarized, and the key elements that show how pre-service teachers develop their TPACK are highlighted.

Table 1. Total studies in the literature review

No	Year of Publication	Number of Studies	Percentage
1.	2015	2	25%
2.	2018	1	12.5%
3.	2019	2	25%
4.	2020	2	25%
5.	2021	1	12.5%

Eight studies matched the aforementioned inclusion criteria out of the 364 papers found during the original search procedure. As a result, 356 papers were cut through the analysis for the ensuing reasons (1) The TPACK framework served as the study's foundation. However, it did not assess teachers' TPACK development. (2) The study's participants weren't English instructors in Indonesia. (3) The article solely discussed the conceptual and theoretical understanding of TPACK. (4) Access was denied. Thus, the article could not be retrieved (electronic or hard copy).

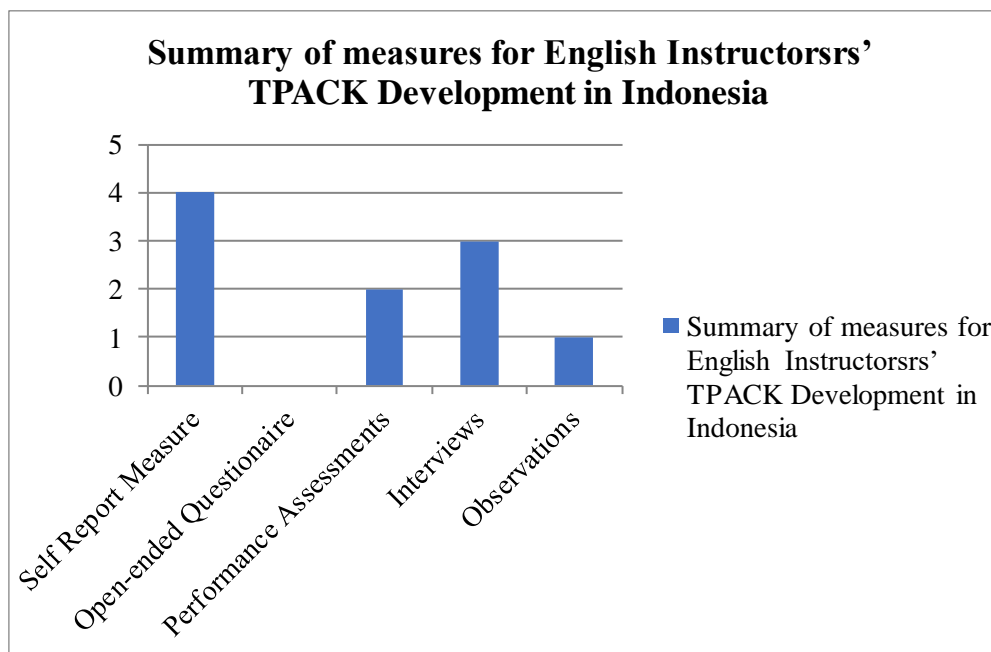


Figure 2. Article on the development of TPACK for English instructors in Indonesia

Discussion

A. The English Instructors' TPACK Development Method In Indonesia

1. Self-Report Measures

Self-report assessments frequently employ questionnaires that ask participants to rate their perceptions of their knowledge of the TPACK domains and their interactions. Self-report measures are frequently used in research investigations, and the study outcomes are typically measured using a survey instrument. Report measures chosen typically comprised numerous subscales correlated to one or more TPACK. A survey instrument is generally used in research projects that rely on self-report measures to gauge the study's completion. According to the search analysis, 5 of 8 studies (62.5%) selected for this literature review examined English instructors' development of TPACK using self-report measures. In most research, particular subgroups of English instructors were polled, and the chosen self-report measures frequently contained numerous subscales correlated to one or more TPACK domains.

Table 2. Self-report measure category

No	Authors and Year	Number of Studies	Themes
1	Ansyari (2015)	1	Creating and assessing a program of professional development for basic technology integration in English as a Foreign Language (EFL) classrooms
2	Mahdum (2015)	1	Technological Pedagogical and Content Knowledge (TPACK) of English Teachers in Pekanbaru, Riau, Indonesia
3	Tan et al. (2019)	1	Examining pre-service teachers' knowledge of teaching multimodal literacies: validation of a TPACK survey
4	Ammade et al. (2020)	1	TPACK model-based instruction in teaching writing: An analysis of TPACK literacy
5	Prasojo, et al. (2020)	1	Domains of Technological Pedagogical and Content Knowledge: Factor Analysis of Indonesian In-Service EFL Teachers

Using self-report measures, an analysis of the findings from the TPACK investigation projects found five key themes (see table 2). The first theme notes how well-accomplished development programs for technology merging in Indonesian university English language teaching environments have been developed and evaluated.

The research investigates the characteristics of this program to English lecturers' TPACK development. The study looked at how this program's qualities helped English instructors develop their technological pedagogical content knowledge (TPCK). The findings from 12 lecturers indicate that the program was well-received, and TPACK improved following professional development activities (Ansyari, 2015).

The second theme is the development and integration of TPACK into instruction by in-service teachers. Self-evaluation of Schmidt et al. (2009) and Sahin (2011) of TPACK's seven subdomains led them to this theme. Using Alpha Cronbach's test, the reliability of the questionnaire was determined to be 0.975, indicating that English teachers at the senior high school in Pekanbaru fell into the "good" position in the TPACK. It suggests that the instructors have done a good job creating and utilizing their TPACK (Mahdum, 2015).

The next theme is derived from Tan et al. (2019) statistical analysis, which confirms that TPACK is used in meaning-making or social semiotics in multimodal literacy. The fourth theme presented an analysis of TPACK literacy among lecturers at Universitas Muhammadiyah Parepare, Indonesia. In this study, Ammade et al. (2020) utilize a slight modification of the TPACK survey model Schmidt et al. (2009). The main factors on the survey were TK, PK, CK, and TPACK. The results of the research indicate that the literacy level of lecturers at TPACK was at a moderate stage. So it needs to be pumped towards a perfect ability by increasing training or learning workshops.

The last theme by Prasojo (2020) study elaborated on how Indonesian EFL in-service teachers view their TPACK while also creating and evaluating the suggested survey instrument. In this investigation, PK had the greatest perception, whereas TK had the lowest. This research suggests that Indonesian teachers should concentrate on using technology in the classroom. The programs' technology-based coursework should also be adequately updated and delivered. The two main focuses on this particular issue are technological skill and knowledge for content and instruction.

2. Performances Assessment

Evaluate teachers on TPACK and technology integration; it can be done by modifying the rubric of the technology integration assessment instrument developed by Britten & Cassady (2005); Harris et al. (2010). There are two studies discussing English teachers' TPACK development in Indonesia (see table 3).

Table 3. Performance assessment category

No	Authors and Year	Number of Studies	Themes
1	Ansyari (2015)	1	Creating and assessing a program of professional development for basic technology integration in English as a Foreign Language (EFL) classrooms
3	Sari et al., (2021)	1	Enhancing EFL teachers' technological pedagogical content knowledge (TPACK) competence through reflective practice

Ansyari (2015) used a rubric from Britten & Cassady (2005) that was modified by Harris, Grandgenett, and Hofer (2010) to evaluate teachers. The lesson plans of the lecturer were also gathered before the professional development program. Two evaluators examined seven components for their assessment, TK, CK, PK, TCK, TPK, PCK, and TPCK. Every factor received a score between 1 (not at all), 2 (minimal), and 3 (strong). The outcome of the pre-and post-TPACK questionnaires demonstrates that in the TPACK professional development program, lecturers' knowledge increased.

While Sari et al. (2021) stated that teachers could use reflection as a potent tool to help them draw conclusions about their instruction that are adaptable, the EFL teachers used tales about their use of technology to conduct their reflection, which raised their awareness of their teaching strategies and inspired them to take action to make improvements.

3. Interviews

Studies concentrating on pre-service teachers' TPACK development frequently employ interviews as a research method (Koehler et al., 2012). The interview session was typically audio-recorded for later coding (Wang et al., 2018). This literature analysis identified 3 studies that employed interviews to assess English instructors' TPACK development in Indonesia (see Table 4).

Table 4. Interview category

No	Authors and Year	Number of Studies	Themes
1	Ansyari (2015)	1	Creating and assessing a program of professional development for basic technology integration in English as a Foreign Language (EFL) classrooms
2	Oktalia & Drajati (2018)	1	English teachers' perceptions of text-to-speech software and Google site in An EFL Classroom: What English teachers think and know
3	Sari et al., (2021)	1	Enhancing EFL teachers' technological pedagogical content knowledge (TPACK) competence through reflective practice

Ansyari (2015) asked 12 English lecturers, and they are pleased with how the TPACK professional development program has worked out for them. Approximately 75 percent said they liked the program, while only a few said it was tiresome. The program's shortcomings included a lack of active student involvement and restricted time for professional growth and technology investigation. All lecturers acknowledged improving their understanding of lesson planning and shifting their conception of technology in the classroom from a separate element to an integral one. Eleven professors (91.6%) selected the design process as the stage that was the most useful. Three key areas received recommendations: facilities and resources, follow-up, and assistance. Due to inadequate facilities, resources, and student aptitude, lecturers had challenges (Ansyari, 2015).

While Oktalia & Drahati (2018) conducted a study that used the TPACK model and Google Sites as the media to distribute the listening material to examine how EFL teachers perceive using a Text to Speech tool to create listening materials, the results demonstrate that EFL teachers support integrating the Text to Speech software utilizing the TPACK methodology. Employing this digital method in the language learning process by EFL teachers was beneficial.

Sari et al. (2021) investigated 2 EFL teachers in secondary school through their stories about using technology to conduct their reflection, which raised their awareness of their teaching methods and inspired them to take action to improve them. Because of the significance of reflective practice for TPACK, teacher training may consider offering sessions to help participants build the knowledge and abilities needed for reflective practices.

4. Observations

This literature analysis revealed 1 study that employed observation to assess the growth of TPACK in English-speaking institutions in Indonesia (see Table 5).

Table 5. Observation category

No	Authors and Year	Number of Studies	Themes
1	Sari et al. (2021)	1	Enhancing EFL teachers' technological pedagogical content knowledge (TPACK) competence through reflective practice

This research looked at two EFL instructors' accounts of how the cycle of reflective practice led them to view pedagogy, material, and technology as an integrated body of knowledge that may inform efficient technology-assisted instruction. This study looked at two EFL instructors' accounts of how the cycle of reflective practice led them to view pedagogy, material, and technology as an integrated body of knowledge that may inform efficient technology-assisted instruction. The activity of teachers during a teaching and learning process was observed and documented by researchers. The teachers reflected in action by keeping track of events as they occurred throughout their teaching practice and acting according to the informal hypothesis. Instructors' comprehension of creating a new lesson plan for the classroom's TPACK perspective came from reflection-on-action. The connection between CK and TK, which led to the emergence of reflection on TCK, is a key piece of knowledge in reflection-for-action. It prompted teachers to consider how technology use relates to students' needs for content understanding.

B. Themes From Each Research Method Category

Several themes about developing English teachers' TPACK in Indonesia were found in each TPACK research technique category based on the analysis offered. These themes were discovered after detecting recurrent patterns or phrases in the study's findings connected to the development of English teachers' TPACK. Though various themes or a mix were found in studies using five research methods, two or more are

worth more examination because they were each reported using all or a number of five research methods considered.

Table 6. Summary of each research method category

Summary Of Each Research Method Category			
Self-report measure	Performances assessment	Interviews	Observations
1. An effective modeling program was successful for lectures' TPACK development.	Positive TPACK growth among English instructors as a result of appropriate modeling.	Positive TPACK growth among English instructors as a result of appropriate modeling.	Positive TPACK growth among English instructors as a result of appropriate modeling.
2. English instructors in Indonesia have a "good" TPACK.			
3. The eight-factor scale was suitable for evaluating pre-service teachers' TPACK for multimodal literacies.			
4. In service in Indonesia EFL teachers believe that they have sufficient pedagogical knowledge but lack technology competence.			

The most often employed data collection techniques from studies included in this study were self-report (N=5), even though the teacher education community is still looking at how English instructors construct TPACK. Researchers are making strides to build upon prior research and gradually include more varied approaches in their analysis of TPACK development. Several self-report instruments have gone via a validation procedure to make sure consistency while searching the TPACK growth of pre-service teachers.

All of the research methodologies looked at produced findings with the keyword "appropriate modeling" present as the first theme. Most programs require more significant to help English teachers integrate technology into various instructional

situations because the goal is to enhance their TPACK throughout their programs. The second topic worth discussing is how academics look at and report on how English instructors developed their TPACK in connection with the seven knowledge areas. According to several researchers, pre-service teachers must build strong TK to significantly develop their TPACK (Prasojo, 2020). While documenting the knowledge development for the unite TPACK (TCK, TPK) domains is challenging, some researchers have successfully detected pre-service teachers' knowledge development in the core TK, CK, and PK domains. While according to some studies, the integration of knowledge PCK, TCK, and TPK domains either showed no increase or could not be found.

CONCLUSION

Eventually, the goal of this literature review was to give English instructors in Indonesia a comprehensive overview and synthesis of earlier research on studies based on the TPACK conceptual framework and conducted with pre and in-service teachers and lecturers. It was important to identify the different research methods (self-report measures, open-ended questionnaires, performance assessments, interviews, and observations) utilized to scrutinize English instructors' TPACK development to report and synthesize the findings from these studies. The present study's findings provided an overview of the research methodologies and the leverage on the growth of TPACK. Additionally, this study showed a rise in publications about TPACK development among Indonesian English teachers. It was also important to look at what these studies reported regarding English instructors' actual TPACK development. Finally, this study is anticipated to enhance English teachers' preparation and use of technology in various classroom teaching and learning scenarios.

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