A Structural Correlation Model of EFL Teachers' Technological Pedagogical Content Knowledge and their Teaching Effectiveness

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Abstract

This current study is designed to examine the structural correlation between EFL teachers' TPACK and their teaching effectiveness. A quantitative method was employed in this study, which involved 216 EFL teachers of primary schools with more than two-year teaching experiences in Gresik, East Java-Indonesia. A validated questionnaire was utilized to collect the data. It was then analyzed by using Structural Equation Modeling–Partial Least Square (SEM-PLS) with SmartPLS 3.2.9 program to test the proposed hypotheses. The findings revealed that only three domains of teachers' TPACK support their teaching effectiveness, i.e.; pedagogical content knowledge, technological pedagogical knowledge, and technological pedagogical content knowledge. It implies that teacher technological knowledge, content knowledge pedagogical knowledge and technological content knowledge could not work alone for performing an effective teaching. Teacher knowledge of technology, pedagogy, and subject matter should be comprehensively integrated. Significantly, this study provides empirical evidence on the TPACK constructs that support teacher effectiveness.

Keywords: *TPACK, Teaching Effectiveness, EFL Teachers, SEM Analysis*

Introduction

Technology becomes a glorified tool that is perceived to be successfully presenting an effective teaching (Chauhan, 2017; Yenkimaleki & van Heuven, 2019). Teachers are expected to comprehend and utilize technology in teaching due to the needs of the 21st century education (Kaeophanuek et al., 2019). Many efforts are carried out to sharpen teachers' skills in operating technological tools in classrooms such as workshop, training, software development, etc. that will pilot teachers' technological knowledge acquisition. This is believed that it helps teachers

teach effectively. Therefore, it is a call for 21st teachers to understand how technology, pedagogy, and subject matter knowledge are appropriately integrated. TPACK as the most emerging technology integration framework which covers the prominent elements in teaching nowadays (technology, pedagogy, and content) is boosted among pre-service and in-service teachers. Today teachers need to acquire technological knowledge and skills in TPACK framework in order to perform an effective teaching (Setyosari et al., 2020).

Many TPACK related studies were conducted with different focuses; teacher TPACK measurement and development (Baser et al., 2016; Dewi et al., 2020; Koçoğlu, 2009; Valtonen et al., 201), teacher TPACK training (Bugueño, 2013; Kurt et al., 2014; Limbong, 2017; Nugraha et al., 2022), TPACK instrument development (Kabakci Yurdakul et al., 2012; Schmid et al., 2020), relationships among related variables; TPACK and computer self-efficacy, and cognitive style (López-Vargas et al., 2017); TPACK, teachers' self-efficacy, and TAM (Joo et al., 2018); TPACK, teacher's techno-stress, computer self-efficacy, and school support (Dong et al., 2020); TPACK, organizational innovative climate, use of ICT in pedagogy, and teacher's self-efficacy (Andyani et al., 2020); TPACK, self-efficacy, perceived ease of use, and technology integration effectiveness (Cahyono et al., 2016); TPACK and students' learning and innovation (Sulistyarini et al., 2022); TPACK and its impacts on teachers' acceptance of online teaching and learning (Wijayati et al., 2024). The ultimate goals of those researches eventually lead to the students' success; whether TPACK enables teachers to conduct a successful teaching learning process that takes along the learning objectives accomplishment.

In EFL classroom context, successful implementation of technology integration in teaching is much determined by teachers' TPACK (Aniq & Drajati, 2019), especially teachers' technological knowledge. This claim is in line with what Li & Ni (2011) revealed through their study that technological innovations are more worthwhile for better instruction as they are allied with innovative teaching, connect teachers to the real world ideas, and help them experience a more productive teaching process. Another study by Aisyah et al. (2021) showed that TPACK framework implemented by teacher can successfully help students understand the subject matters. The findings of those studies implied that TPACK as technology integration framework imposed by teachers could help them perform an effective teaching. On the other hand, study conducted by Alshehri (2012) found that technological knowledge of teacher did not relate to teaching effectiveness. Furthermore, Guerriero (2013) summarized in his study that only pedagogical content knowledge that corresponds to quality of teaching. Hence, it is vital to examine how teachers' TPACK and teacher effectiveness are correlated, especially which domains of the EFL teachers' TPACK supporting their effectiveness. Since there are no studies to date that have quantitatively examined the relationship between the two constructs especially in the context of EFL teachers, then this present study tries to fill the research gap.

Review of the Literature

Technological Pedagogical Content Knowledge

Technological Pedagogical Content Knowledge (TPACK) is a theoretical framework utilized to comprehend teacher knowledge for effective technology integration (Mishra & Koehler, 2006). This framework builds on Shulman's concept (1986) of Pedagogical Content Knowledge (PCK) to comprise technological knowledge within pedagogical and content

knowledge due to development of digital technologies in instructional setting. It is defined as "the basis of effective teaching with technology; requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face" (Koehler & Mishra, 2009, p. 66).

TPACK comprises seven domains of knowledge; technological knowledge (knowledge of using digital technologies), pedagogical knowledge (knowledge of teaching strategies and methods), content knowledge (knowledge of subject matters), technological pedagogical knowledge (knowledge of how technology is utilized in pedagogical process), technological content knowledge (knowledge of how technology is optimized for presenting subject matters), pedagogical content knowledge (knowledge to deliver subject matters by effective teaching strategies), and technological pedagogical content knowledge (knowledge of how technology can be used to deliver learning content in appropriate teaching strategies and methods)(Mishra & Koehler, 2006).

Due to the importance of TPACK, some studies especially in English language teaching context were conducted. Hsu (Hsu, 2016) investigated a group of EFL teachers using mobile devices in classroom. The findings showed that high levels of technological pedagogical knowledge, technological content knowledge, or TPACK indicating that teachers require to possess either the combination of technological with pedagogical and content knowledge or TPACK (as a comprehensive package) to optimize technology in teaching. In addition, Cahyono et al. (2016) examined how TPACK-oriented teaching practice course benefits Indonesian EFL teachers in improving their teaching quality. It involved 20 secondary teachers from various areas of East Java province, Indonesia. The results revealed that the teachers benefited a lot from the course and were successfully preparing lesson plan and performed the teaching practices by using TPACK framework. A similar study conducted by Asiyah et al. (2021) also indicated that the use of TPACK framework was successfully implemented through an optimization of Telegram Bot. As the result, it could enhance students' understanding toward the subject matters. Teachers believed that integrating technology in teaching is associated with the quality of education as it creates teaching and learning an interesting activity (Khan Shahadat Hossain, 2014).

Teacher Effectiveness

Teacher effectiveness is defined as "a process of measuring teaching quality based on quality indicators. High quality teachers are required to demonstrate frequent performance on quality indicators."(Akram, 2019, p. 93). In addition, Barry (Barry, 2010) argued that teaching effectiveness could be piloted through evaluating what effective teachers know and do in their daily professional practice. It could involve "their understanding of subject matter, learning theory and student differences, planning, classroom instructional strategies, knowing individual students, and assessment of student understanding and proficiency with learning outcomes." For that reason, current students, former students, the teacher him or herself, colleagues, administrators, or trained observers can evaluate how teacher effectiveness is (Marsh & Roche, 1997).

Measuring teacher effectiveness is crucially conducted for teaching quality reflection. It can depict how effective the teaching process is carried out in the classroom. Effective teaching is one of the characteristics of an effective teacher. It significantly affects student learning outcomes. Positive student learning outcomes are a parameter which validates the teachers' effectiveness (Rezaull Karim et al., 2021).

In the context of 21st century teaching, technology poses a prominent position. Teachers should be equipped with technology for an effective teaching. Therefore, integrating technology in instruction becomes a critical issue for teachers nowadays. They should not only be knowledgeable on pedagogy and subject matter but they should also be skillful in technology use in classroom setting. The most applicable framework used by teachers in integrating the three domains of teaching is TPACK (Sobel & Grotti, 2013). Some studies revealed that there was positive correlation between teacher content knowledge and pedagogical knowledge with teacher effectiveness (Hill et al., 2008). In addition, Humes (Humes, 2017) found that there was positive relationship between teachers' TPACK and their teaching effectiveness. Koehler et al. (2013) claimed that TPACK by teachers is critical to effective teaching with technology. It is also empirically proven that the teachers' ability to integrate technology in teaching positively contributed to teacher effectiveness (Tournaki & Lyublinskaya, 2014).

Based on the above discussion about the correlation between teachers' TPACK and teaching effectiveness, the following hypotheses are proposed:

H₁: technological knowledge significantly influences teacher effectiveness

H₂: content knowledge significantly influences teacher effectiveness

H₃: pedagogical knowledge significantly influences teacher effectiveness

H₄: pedagogical content knowledge significantly influences teacher effectiveness

H₅: technological content knowledge significantly influences teacher effectiveness

H₆: technological pedagogical knowledge significantly influences teacher effectiveness

H₇: technological pedagogical content knowledge significantly influences teacher effectiveness

Methodology

Research Design

A quantitative method was employed in this study to examine the structural correlation between EFL teachers' TPACK and their teaching effectiveness. Significantly, this study was to measure the seven domains of EFL teachers' TPACK influences on teacher effectiveness. Therefore, structural equation modeling-partial least square (SEM-PLS) analysis was utilized to predict and explain the correlation among the constructs (Sarstedt & Cheah, 2019).

Participants

This study involved 216 EFL teachers of primary schools in Gresik, East Java, Indonesia. Teachers with two-year teaching experiences were allowed to take a part on this survey. They could be from public or private schools. Table 1 presents the detailed data of respondents' demographic information as follows.

Table 1

Demographic Data of Respondents

Variables	Items	Frequency (n=216)	Percentage (%)
Gender	Male	69	31.94
	Female	147	68.06
Age	20 – 30 years	30	13.89
	31 – 40 years	96	44.44
	41 – 50 years	57	26.39
	51 – 60 years	33	15.28
Years of teaching experiences	2 – 5 years	21	9.72
	6 – 10 years	51	23.61
	11 – 15 years	60	27.78
	16 – 20 years	45	20.83
	> 20 years	39	18.06
Status of Teacher School	Public	72	32.87
	Private	144	67.13
Professional Teacher Certificate	Yes	185	62.50
	No	31	37.50

It can be seen that most of the teachers are female with age ranges from 31-40 years old. In addition, more than a half of teachers who participated in this study are assigned to teach at private schools. It is important to note that number of private schools is more dominant in Gresik. Therefore, it seems to be normal that the more respondents come from private schools. However, most of the teachers have obtained their professional certification program from government. It means that their quality of teaching has been standardized. Furthermore, they have been teaching for more than ten years.

Instrument

There were two instruments used in this study; EFL TPACK measurement and School Teacher Effectiveness Questionnaire (STEQ). To measure EFL teachers' TPACK, a valid and reliable instrument developed by Baser et al. (Baser et al., 2016) was used. This instrument was specially designed and developed for assessing EFL teachers' TPACK. It is then significantly relevant to this study. It comprises seven domains of TPACK with 39 items; technological knowledge (TK) 9 items, content knowledge (CK) 5 items, pedagogical knowledge (PK) 6 items, pedagogical content knowledge (PCK) 5 items, technological content knowledge (TCK) 3 items, technological pedagogical knowledge (PCK) 7 items, and technological pedagogical content knowledge (TPACK) 4 items.

In addition, to examine teacher effectiveness, a measurement for School Teacher Effectiveness Questionnaire (STEQ) proposed by Akram (Akram, 2018) was utilized since it covers comprehensive aspects on assessing quality of teaching. However, the statements were adjusted for EFL teachers. This instrument validity and reliability test were good with the overall reliability α=.88 and scale wise ranged from .70 to .76. It consists of 26 items which are elaborated into five domains as follows; subject matter (6 items), instructional planning and strategies (6 items), assessment (5 items), learning environment (6 items), and effective communication (3 items).

Research Procedure

To begin with, the researchers asked for permission to conduct a study from both authorized officers of educational department which regulate and organize educational sector (Board of Ministry of Education and Culture; and Board of Ministry of Religious Affairs in Gresik). Afterwards, the researchers were given an access to join WhatsApp group of principals in Gresik. Through this group, an online questionnaire which was administrated in Google Form was distributed to EFL teachers by principals and shared to WhatsApp group in each school. Data collection was carried out from January to March 2023. Having the data gathered and filtered, the participant responses on online questionnaire were initially extracted into MS Excel spreadsheet. A Structural Equation Modeling (SEM) was then utilized to examine the structural relationships among the constructs.

Data Analysis

To examine and explain the structural correlation between EFL teachers' TPACK and their teaching effectiveness, the data were then analyzed by using SmartPLS application V.3.2.9. There were two stages in data analysis. First, measurement model was applied to assess the convergent validity and discriminant validity of the gained data. Besides, through the first stage, data of descriptive statistics (such as mean, standard deviation, frequency and percentage) were obtained. Second, examining the structural model by using bootstrapping technique to measure the construct relationships as the proposed hypotheses was completed.

Results

Before addressing the structural correlation between EFL teachers' technology integration knowledge and their teaching effectiveness, examining the convergent validity of the measurement model, limited to the domains of teacher technological integration knowledge with pedagogical and content aspects, is critically needed. The prior instrument of TPACK proposed by Tseng (2016) with seven domains is adapted for the purposes of this study. Only four domains that accommodate technological aspects are utilized to measure teacher technology integration knowledge in teaching. They are technological knowledge (TK), technological pedagogical knowledge (TPK), technological content knowledge (TCK), and technological pedagogical content knowledge (TPACK).

Measurement Model

To test validity and reliability of the proposed measurement model, convergent validity and discriminant validity are employed. The values of outer loading factor should be 0.7 or higher, average variance extracted (AVE) should reach 0.5 or higher, and its composite reliability (CR) achieve minimum value of 0.7 (Hair & Alamer, 2022). As shown in Table 2, the values of those criteria meet the threshold values. Therefore, the convergent validity of this measurement model is not an issue in this study.

Table 2

Convergent Validity of Measurement Model

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CK	0.914	0.928	0.936	0.747
PCK	0.939	0.940	0.954	0.805
PK	0.925	0.925	0.941	0.727
TCK	0.808	0.829	0.886	0.722
TK	0.920	0.931	0.933	0.609
TPCK	0.831	0.851	0.885	0.659
TPK	0.919	0.927	0.935	0.675
TE	0.979	0.981	0.980	0.658

After the convergent validity is completed, the discriminant validity, the extent to which the construct does not correlate with others, of the proposed measurement model is examined. To test discriminant validity, comparing the shared variance between factors with the values of AVE from individual factor is conducted (Fornell & Larcker, 2014). As depicted in Table 3, the discriminant validity of this measurement model is not also an issue in this study since the values of the shared variances between factors are lower than the values of AVE from individual factors. Overall, the measurement model proposed in this study demonstrated an adequate convergent validity and discriminant validity. Thus, it is confirmed as valid and reliable.

Table 3

Discriminant Validity – Fornell-Larcker Criterion

	CK	PCK	PK	TCK	TK	TPCK	TPK	TE
CK	0.864							
PCK	0.802	0.897						
PK	0.781	0.879	0.853					
TCK	0.642	0.608	0.654	0.849				
TK	0.686	0.709	0.733	0.645	0.780			
TPCK	0.669	0.763	0.776	0.725	0.733	0.851		
TPK	0.711	0.796	0.804	0.706	0.740	0.812	0.821	
TE	0.656	0.747	0.735	0.567	0.568	0.702	0.724	0.811

Structural Model and Hypotheses Testing

After examining the measurement model, a path coefficient by bootstrapping technique test was applied. It is to evaluate the structural model on the correlation between the dependent and independent constructs. A confidence level of 95 percent was utilized with an accuracy limit of 0.05 (5%). Hence, the results of hypotheses testing were categorized 'supported' if the P value was less than 0.05. As summarized in Table 4, PCK, TPK and TPACK had positive influence on TE. However, TE was not influenced by CK, PK, TK and TCK.

Table 4

Results of Hypotheses Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Result
CK ->TE	0.085	0.090	0.075	1.131	0.259	Not supported
PCK ->TE	0.288	0.287	0.126	2.277	0.024	Supported
PK ->TE	0.190	0.185	0.107	1.774	0.077	Not supported
TCK ->TE	0.017	0.020	0.047	0.370	0.712	Not supported
TK ->TE	-0.139	-0.140	0.082	1.709	0.089	Not supported
TPACK ->TE	0.182	0.184	0.102	1.779	0.017	Supported
TPK ->TE	0.218	0.223	0.094	2.320	0.021	Supported

Discussion

The current study was designed to examine structural correlation between teachers' TPACK and their teaching effectiveness in EFL classroom setting. This study attempts to provide empirical evidences by quantitative approach whether teachers' technology integration knowledge takes a significant role in teaching and to figure out the vital domains of TPACK that strongly contribute to teacher effectiveness.

Refer to the aforementioned findings, PCK had positive influence on teacher effectiveness. Teacher knowledge of how to deliver subject matter appropriately was perceived to affect their quality of teaching. PCK enables teachers to design and deliver instruction that is meaningful and relevant to students. They understand the concepts deeply themselves, allowing them to explain complex ideas in ways that are accessible to learners. This helps to ensure that students grasp the material and can apply it in various contexts. This is line with what Kathirveloo & Marzita (2014) revealed on their study that there is a strong correlation between what teachers know, how they know it, and what they can do in the context of instruction. It shows that pedagogical content knowledge should be involved to perform an effective instruction. Teachers with PCK can anticipate common misconceptions and difficulties that students may encounter and proactively address them in their teaching. They can provide targeted support and scaffolding to help students overcome challenges and develop problem-solving skills. Teachers might face difficulties in teaching the subject effectively if they do not possess knowledge of pedagogies and planning processes which are much suitable and applicable to the teaching of a particular content at certain context (Jason T. Abbitt, 2011). With PCK, teachers can tailor their instructional strategies to meet the diverse needs of students in their classrooms. They can adapt lessons to accommodate different learning styles, abilities, and backgrounds, ensuring that all students have the opportunity to succeed.

Furthermore, PCK enables teachers to design engaging and interactive lessons that capture students' interest and motivate them to learn. By incorporating a variety of instructional methods and technologies, teachers can create dynamic learning environments that foster curiosity and enthusiasm. The findings are also relevant to what Ahmed & Shogbesan (2023) confirmed that "the most effective teachers are those who can successfully convert their knowledge of the materials and strategies they employ into the development of their students' learning" (p. 64). In addition, the findings strengthen the study done by Guerrieo (2013) that only pedagogical content knowledge seems to have an impact on the teachers' quality of

instruction. To this end, EFL teachers could perform teaching effectively with the sufficient knowledge of pedagogy and subject matters.

This study also revealed that teacher TPK contributes to teacher effectiveness. However, teacher technological knowledge and pedagogical knowledge do not support an effective teaching. The findings empirically relate to some studies which investigated teacher use of technology in teaching. The studies demonstrated that the utilization of technology in classroom setting depends on how teachers optimize it in proper ways (Heitink et al., 2017). Those would work for an effective teaching with teacher knowledge of subject matter, pedagogy, and technology use. Furthermore, Hsu (2016) stated that technology knowledge and skills alone are not sufficient for teachers to unleash the power of technology that would catalyze educational changes. Therefore, EFL teachers should be capable of integrating the three main domains of instruction for successful teaching. TPK empowers teachers to leverage technology to create engaging and interactive learning experiences for students. With access to a wide range of educational tools and resources, teachers can design lessons that cater to diverse learning styles and preferences. Technology has the potential to capture students' interest and motivation by making learning more interactive, immersive, and relevant. Teachers with TPK can use digital platforms, multimedia resources, and collaborative tools to foster active participation and collaboration among students.

Moreover, TPK enables teachers to personalize instruction to meet the individual needs and interests of students. Through adaptive learning technologies, formative assessment tools, and data analytics, teachers can provide targeted support and differentiated instruction to help every student succeed. In today's digital society, proficiency with technology is essential for success in academics and the workforce. Teachers with TPK not only model digital literacy skills but also help students develop the critical thinking, creativity, and problem-solving abilities needed to navigate and thrive in a rapidly changing world. Technology facilitates communication and collaboration among students and teachers across geographic boundaries. With TPK, teachers can connect their classrooms with peers around the world, fostering cross-cultural understanding, empathy, and collaboration. TPK encourages teachers to engage in ongoing professional development to stay abreast of emerging technologies and innovative pedagogical practices. By continuously expanding their digital skills and knowledge, teachers can enhance their teaching effectiveness and improve student outcomes.

Acquiring knowledge of technology, pedagogy, and content is a big deal for nowadays teachers. With sufficient understanding on how to integrate those aspects, teachers can provide a 21st century learning effectively. The findings of this study found that teachers' TPACK support teacher effectiveness. In other words, the higher EFL teachers' TPACK will be the higher teaching effectiveness since the two constructs are positively correlated. EFL teachers with high TPACK have better performance in subject matter, instructional planning and strategies, assessment, learning environment, and effective communication. EFL teachers with strong TPACK are adept at integrating technology into their language teaching practices. They can effectively use digital tools such as language learning apps, online resources, multimedia materials, and communication platforms to enhance language instruction and facilitate language learning activities. TPACK enables EFL teachers to adapt language content and materials to digital mediums in ways that are engaging and meaningful for learners. They can

create or curate digital content that aligns with language learning objectives and promotes language acquisition through authentic and relevant contexts.

With TPACK, EFL teachers can differentiate instruction and personalize learning experiences to meet the diverse needs and preferences of learners. They can utilize technology to provide tailored support, offer individualized feedback, and scaffold language learning activities based on students' proficiency levels, learning styles, and interests. TPACK empowers EFL teachers to facilitate collaborative learning experiences among students, both within the classroom and beyond. They can leverage digital platforms and tools to facilitate online discussions, group projects, peer feedback, and virtual language exchanges, fostering communication, collaboration, and cultural exchange among learners. EFL teachers with TPACK can leverage technology to conduct formative assessment and provide timely feedback to students on their language learning progress. They can use digital assessment tools, multimedia presentations, online quizzes, and interactive exercises to assess language skills, track student performance, and identify areas for improvement. TPACK encourages EFL teachers to engage in continuous professional development and lifelong learning to stay updated on emerging technologies, digital resources, and innovative pedagogical practices in language teaching. They can participate in online courses, webinars, and professional learning communities to enhance their TPACK skills and improve their effectiveness as language educators.

Furthermore, the findings of this study are in line with what Ching (2021) found in his research that there is a significant positive relationship between teachers' TPACK and their instructional effectiveness. Teachers with high level of TPACK can effectively perform in classroom considering the lesson organization, subject matter mastery, learning activities management, efficient lesson implementation and evident instructional materials presentation. Another study by Humes (2017) also showed that there is positive relationship between teachers' TPACK and their teaching effectiveness. It implies that teacher knowledge on technology integration positively contribute to the successful teaching. Eventually, TPACK is highly pivotal that teacher enables to present an effective teaching. Koehler & Mishra (2013) claimed that TPACK by teachers is critical to effective teaching with technology. It is also empirically proven that the teachers' ability to integrate technology in teaching positively contributed to teacher effectiveness (Tournaki & Lyublinskaya, 2014). TPACK plays a pivotal role in empowering EFL teachers to leverage technology effectively, adapt language instruction to digital mediums, differentiate learning experiences, foster collaboration, assess student progress, and engage in continuous professional development, thereby enhancing their effectiveness in facilitating language learning in the digital age.

Conclusion

The use of TPACK as a framework of integrating technology in teaching is most demanded nowadays. Examining its structural correlation with teacher effectiveness should be critically carried out since there is still a lack of empirical studies testing the hypotheses on the relationship of the two constructs; especially from quantitative perspectives. Refer to the discussion of this study, it sums up that EFL teacher technological pedagogical knowledge, pedagogical content knowledge, and technological pedagogical content knowledge support teacher effectiveness. Meanwhile, EFL teacher technological knowledge, content knowledge,

pedagogical knowledge, and technological content knowledge do not support their teaching effectiveness. It implies that single domain of TPACK cannot work alone. The three domains of TPACK should be well integrated to provide an effective teaching. With high level of TPACK, teachers can perform good instructional planning and strategies in teaching. Besides, they can also create better learning environment. It evidently benefits a lot for student learning outcomes. Notably, it comes to an end that teachers with good knowledge of technology integration in teaching can perform successful and effective classroom. Thus, these findings can strengthen theoretical and pedagogical implication on the importance of teacher TPACK in the context of English language teaching; how government, stakeholder, and teacher should react on this.

Due to some limitations of this study; such as the subjects, number of participants, and teacher profiles involved, that do not represent all Indonesian teachers, further studies are recommended to complete and compare the findings in similar context with larger and different demographic. Furthermore, upcoming researches can encompass other constructs that correlate with teacher effectiveness such as teacher creativity and self-efficacy.

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Ethics Declarations

Competing Interests

No, there are no conflicting interests.

Rights and Permissions

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