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AN INVESTIGATION OF TPACK WITHIN ICT INTEGRATION: THE CASE OF NON-CERTIFIED ENGLISH TEACHERS IN KOLAKA

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Abstract
This study focuses on non-certified English teachers using Information and Communication Technology (UICT) in the teaching practice with the framework is technological pedagogical and content knowledge (TPACK). The purpose is to elaborate on the interrelationship between all TPACK components and their roles in predicting UICT based on the beliefs of the teachers during teaching practice. The researchers used a mixed-methods design for 20 participants from SMP IT Nur Syamzam Kolaka. Questionnaire and interview, especially semi-structured interviews as an instrument for this study. To collect the data, the researcher did online with the non-certified English teachers at SMP IT Nur Syamzam Kolaka. Using Pearson's correlation coefficient, the relationship between the application of TPACK and the availability of ICT tools was determined by correlating the overall TPACK result with the adequacy of ICT tools. Therefore, the findings of the study that were obtained through the TPACK survey demonstrate how they effectively apply their knowledge. The teachers demonstrate expert knowledge in all TPACK domains. They demonstrate the highest level of knowledge based on the mean of TK (4.28), followed by CK (4.26). While all areas of TPACK have a mean of 4.10, PCK and TPK have the lowest mean (4.11).

Keywords: EFL teaching, ICT, non-certified teachers, TPACK

Introduction
In the world of education in the Covid-19 era, Information and Communication Technology (ICT) has been the main focus for over two years. ICT refers to technology that provides access to information through telecommunications (Ratheeswari, 2018). ICT refers to the educational application of technology (Rank et al., 2011). The use of information and communication technology (ICT) offers a learning tool that can be a preparation for education to obtain effective, free, and useful information.

Using the TPACK framework to conduct a study on shaping the beliefs of non-certified English teachers is one solution to this problem. For instance, Habibi

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et al. (2020) demonstrated that the TPACK elements are linked and identified as a viable framework to assist in understanding the use of UICT by Indonesian non-certified English teachers through teaching practices through the TPACK elements are interconnected and have facilitated the teachers' usage of ICT, minimal focus has been given to teachers' beliefs that TPACK can increase the effectiveness of programs involving technology implementation in teaching practices.

Consequently, the objective of this research is to elaborate on the interrelationship between all TPACK elements and their predictive value for UICT based on the beliefs of non-certified English teachers during teaching practice.

As a consequence of this, the purpose of this study is to elaborate on the interrelationship that exists between all of the TPACK components and their roles in predicting UICT based on the beliefs that are held by non-certified teachers while they are engaged in teaching practice.

ICT platforms for EFL students

Education has been significantly aided by technology's emergence of incredibly helpful tools (Seliaman & Al-Turki, 2012). Using ICT, advancements have transformed language teaching by making online learning materials accessible and mobile (Pardede, 2020). ICT is defined as "technologies that enable the production, visualization, retention, modification, and sharing of data" (Donnelly et al., 2011, p. 1470). In addition, Asabere et al. (2017) defined ICT as the instruments, procedures, and infrastructure that provide the facilities and assistance for the production, distribution, processing, retention, and transmission of all information sources, such as voice, text, information, pictures, and film.

According to Mei et al. (2018), ICT is an effective teaching approach for ESL learners. The rapid rise of ICT has affected every aspect of language teaching methodology. They have been incorporated into integrating classroom practices to strengthen the acquisition of foreign languages. (Apriani et al., 2022; Jayanthi & Kumar, 2016). ICT might be used by teachers as a medium of instruction in teaching and learning activities, particularly in English proficiency (Apriani, 2017).

By Tristiana and Rosyida (2018), ICT (computers and supplementary equipment) can also fill the role of "instructor" or "mentor." The purpose of utilizing the specialized program, including a multimedia program or language-learning applications, is to build understanding by providing guidance, instruction, and data, or additional overview for a specific definition that has been integrated into the program. ICT systems consist of countless applications and tools that make teaching more flexible and interactive so that classroom interactions and learning processes are not limited to students (Parsons et al., 2020). Utilizing ICT as an educational tool allows learners to rapidly and easily access multiple sources of content to help with investigating issues, problem-solving, and making choices; to develop innovative ways to encourage teaching and construct new conceptions in areas of learning; to communicate, discuss, and utilize collaboratively in domestic and international politics; and to obtain new ideas and learning skills (Lombardi & Oblinger, 2007). Joo et al., (2018) added that these student activities have a positive effect on language development. When learners show effort by

asking questions and seeking assistance, including using ICT, they are afforded authentic communication opportunities.

Non-web-based and web-based learning ICT tools are categorized differently (Alkanel & Chouthaiwale, 2018). Non-web-based learning is a form of ICT that teachers and students may access with no internet access. Whereas web-based learning is a form of ICT that teachers and students may access via internet connections. Computers, displays, TVs, loudspeakers, radio, weblog, email, YouTube, film, smartphone, internet resources, sound visuals, e-library, and video conferencing are examples of ICT that can be utilized to learn English. Google Classroom, Zoom, Google Meet, WA, Facebook, YouTube, Instagram, Email, Skype, Kahoot, as well as others, are popular ICT platforms that are currently used to teach English. Recorded audio, social platforms, e-learning, e-books, internet discussion platforms for education, interactive whiteboard activities, internet resources, and electronic diaries are additional pedagogical applications of ICT (Apriani & Hidayah, 2019).

Technological pedagogical and content knowledge (TPACK)

The world's ability to gain knowledge has been greatly enhanced by modern technological advancement. Because of this, the ecosystem of educational technology has evolved. Learning about how students learn is the primary focus in Shulman's (1986) definition of "pedagogical content knowledge". Shulman's concept of Pedagogical Content Knowledge (PCK) has been expanded by Mishra and Koehler (2006), who claim the technology cannot be separated from PCK.

It is Shulman's Pedagogical Content Knowledge (PCK) model that suggests that effective educators combine content knowledge and pedagogical expertise in their instruction (Tallvid, Lunde, & Lindstrom, 2012). The most commonly taught concepts in Shulman's field can be explained and illustrated using the most effective analogies and images. Teachers use the model to represent and formulate the subject matter in a way that other students can understand (Shulman, 1986, p. 9). There have been several theories put forth about how the integration of technology, pedagogy, and content can produce different types of instructor expertise since 2006 when Mishra and Koehler introduced the technical skill component. This includes an understanding of pedagogical material (PCK), knowledge of technology, pedagogical knowledge of technology (TPK), technological know-how (TK), and material knowledge (CK) (Koh, Chai, & Lee, 2010). Seven types of knowledge help support the TPACK system (Mishra & Koehler, 2006).

A lack of technological proficiency is hampering the educational process. Mishra and Koehler (2006) added Technological Knowledge to the PCK as a solution to this problem (TK). What are the fundamentals of technology that can be utilized for educational purposes, according to the term "technological knowledge" (TK)? (Malik, Rohendy, & Widiaty, 2019). According to Mishra and Koehler (2006), all three forms of proficiency (PCK) in teaching are necessary, but increasing technological resources are more important.

Technology in education has a direct bearing on new ideas and approaches to teaching and learning (Tallvid et al., 2012). Teacher education, professional development for educators, and technology use by teachers are all covered by the TPACK system (Koehler & Mishra, 2009). Teachers and students alike will

benefit from TPACK because it will make schools more interesting and useful for students while also improving educational opportunities for all students (Malik, Rohendy, & Widiaty, 2019).

The TPACK by design approach has been the subject of numerous studies. Using a survey of six pre-service teachers in Australia, Gill and Dalgarno (2017) found that six semi-structured discussions throughout a four-year teacher training program can help strengthen their technological pedagogical and content skills (TPACK). The results of the survey indicated that all participants had mastered the pedagogy of technology but to varying degrees. Participant experience had the greatest impact on the development of TPACK because all participants had a thorough understanding of technology. There is a "good" level of TPACK mastery among English teachers in Pekanbaru, Indonesia, according to an investigation by Mahdum (2015). ICT has been successfully integrated with content and appropriate techniques into English language learning according to the report.

Novice teachers and ICT

In learning a foreign language, four basic skills must be mastered, such as listening, speaking, reading, and writing. In an EFL, non-native English speakers are expected to use English. Non-certified English teachers make teaching an extremely difficult endeavor. Moreover, the proliferation of technology and popular culture caused a paradigm shift in language instruction. Teachers and students are currently immersed in a technology-enhanced learning environment 4.0, and it's honestly quite difficult for teachers to catch up.

Therefore, creativity and innovation are essential for promoting TEFL. As teachers, they must have skills in making concepts, applying them, analyzing, synthesizing, and evaluating information obtained from perception, experience, reflection, reasoning, or communication, or generated from various sources. According to Hiebert et al. (2007), "the framework of teacher planning programs that point to help planned instructors in learning how to educate by educating and learning". This system is based on the distinguishing proof of key competencies inborn in analyzing the effect on understudy learning, with an accentuation on arranging, actualizing, and practicing classroom instructor reflection.

Method

In this particular piece of research, an explanatory sequential mixed methods approach was utilized. The researcher began by collecting quantitative data, which they then analyzed to produce qualitative findings in the second stage of the research process. It is possible to explain quantitative data in a way that is more meaningful when using this method. An online survey in the form of a Google form was distributed to them. The purpose of the survey was to collect information regarding the pandemic in Indonesia.

Participants

This study comprised English teachers of SMP IT Nur Syamzam Kolaka. Twenty (20) participants were capable of completing the questionnaire. It is important to understand that every participant in this research consented to take part willingly. Age-wise, the participants ranged between 21 and 23 years old.

Research instrument

The questionnaire developed by Habibi, Yusop, and Razak (2020) was modified and used to collect data. TPACK and UICT survey instruments were adapted and used to construct the questionnaire (Aslan & Zhu 2017). The adopted questionnaire needs to be modified to suit the context of this research. This is intended as a series of closed-ended questions where participants can choose the option that best suits their actual conditions. The adopted questionnaire should be modified to fit the context of this question. This can be expected as a closed-ended question structure in which members can select the option that best suits their original condition.

An additional instrument for data collection was semi-structured interviews. semi-structured interviews were chosen because they provide the era with a set of subjects deduced from the literature on teaching that are worth addressing (these subjects are given a degree of consistency in themes guaranteed by a dedicated member) while allowing the questioner to personalize the interview as important. Therefore, the interview implies that the questioner is not required to follow predetermined questions (Creswell, 2014; Richards, 2003) and can take advantage of the issues of interest that arise at the time of the interview. In this way, all the participants — non-certified English teachers — are fulfilled. All interviews were recorded and deciphered for analysis.

Data collection and analysis

The collected data was sorted and organized for further study. According to the survey results, the following statistical methods were used to analyze the data: The teachers' level of knowledge in the application of the various TPACK domains was assessed using the Weighted Mean. Pearson's correlation coefficient was used to determine the correlation between the use of TPACK and the availability of ICT tools by correlating the overall TPACK result with the adequacy of ICT tools. To determine which of the seven TPACK elements had a significant impact on the overall performance of teachers in TPACK, a stepwise multiple regression analysis was conducted. Modeling and predicting teachers' TPACK development can be done using multiple regressions (Ghora & Bhatti, 2016). The survey results were bolstered by data from the study's qualitative component. To verify the survey results, the teachers’ follow-up interview was performed.

The researcher is using online surveys in the current COVID-19 pandemic to gather data. As a result, the researchers in this study gathered data from participants via an online The researchers created a Google Form to administer the survey. They had to answer 38 questions in the survey. It took between 10 and 15 minutes. SPSS 25 was used to analyze the data collected from the survey respondents. Table 1 shows the demographics of the participants.

Table 1. Demographic information of the participants

Demographic Variables	Categorical Groups	N	%
Gender	Male	10	50%
	Female	10	50%
Age	21 y.o	11	55%
	22 y.o	6	30%
	23 y.o	3	15%
ICT-related course	1	3	15%
	2-3	15	75%
	>3	2	10%
Teaching practices	Yes	20	100%
	No	0	0

Findings and Discussion

In this section, you mention the findings and discussion of your study... For this second type, the focus of the study is the literary works that have been translated into the Indonesian language.

After completing four years of college and acquiring the necessary skills and knowledge, prospective English teachers were prepared to begin their careers in the classroom before serving in the armed forces. There ought to be some kind of metric for determining how efficient TPACK is. To get the most out of the role that literature plays in the process of teaching and learning, make use of technology and tried-and-true instructional strategies.

Technological knowledge

Technological Knowledge (TK) characterizes the non-certified English teachers of digital natives in this era. They have the knowledge and skills necessary to utilize and apply technology.

Table 2 displays the respondents' level of Technology Knowledge (TK). With a mean score of 4.35, the collected data indicates that the teachers' TK focuses heavily on their ability to utilize ICT with ease. The lowest mean of 4.25 focuses on items 1 and 3, "I have the technical skills to use ICT" and "I can solve my own ICT technical problems," respectively. Both the highest and lowest means can be interpreted verbally as "agree." The overall weighted mean on the Technology Knowledge section is 4.28, with an interpretation of "agree".

Table 2. Technological knowledge

Technological knowledge (TK)	Mean	Verbal Interpretation
. "I have the technical skills to use ICT."	4.25	Agree
. "I can learn ICT easily."	4.35	Agree
. "I know how to solve my own ICT technical problems."	4.25	Agree

Pedagogical knowledge

How well the teacher teaches his or her students depends on how well he or she leads the class. This includes teaching methods as well as classroom organization. Pedagogical Knowledge (PK) is presented in Table 3 by the cooperating teachers' evaluations. This item received the highest mean of 4.45 (agree) while item 1 received the lowest mean of 4 (disagree). This means that the teachers "agree" in Pedagogy Knowledge, as indicated by the overall mean of the items, which is 4.17. (PK).

Table 3. Pedagogical knowledge

Pedagogical knowledge (PK)	Mean	Verbal Interpretation
1. "I know how to assess student performance in a classroom."	4.05	Agree
2. "I can adapt my teaching based upon what students currently understand or do not understand."	4.45	Agree
3. "I can adapt my teaching style to different learners."	4.15	Agree
4. "I can assess student learning in multiple ways."	4.25	Agree
5. "I can use a wide range of teaching approaches in a classroom setting."	4.2	Agree
6. "I am familiar with common student understandings and misconceptions."	4.15	Agree
7. "I know how to organize and maintain classroom management."	4	Agree

Content knowledge (CK)

Students who continue their education beyond the secondary level develop the skills necessary to achieve subject mastery. This is the very first hold that every graduate student will experience. The knowledge that a student has in his or her chosen field can be improved by studying a variety of subjects. The candidates for the position of English teacher are given their Content Knowledge (CK) ratings in Table 4. The statement "I can think about the topic like a specialist in my content area" was given the highest mean score of 4.35 (agree), which indicates agreement with the statement. The statement that "I have various ways and strategies for developing my understanding of my content area," which had the mean score of 4.05 and the lowest score overall, was also interpreted as "agree." Non-certified English teachers have a weighted mean score of 4.26 when it comes to Content Knowledge. They "agree" with this score (CK).

Table 4. Content knowledge

Content knowledge (CK)	Mean	Verbal Interpretation
1. "I have sufficient knowledge about my content area."	4.4	Agree
2. "I can think about the subject matter like an expert who specializes in my content area."	4.35	Agree
3. "I have various ways and strategies of developing my understanding of my content area."	4.05	Agree

Pedagogical content knowledge (PCK)

PCK talks about how students are instructed to be able to master the lesson. The pedagogy of teachers gives importance to their information. The non-certified English teacher's Pedagogical Content information appears in the table below (Table 5). The statement "Without ICT, I can choose a teaching approach that can lead students to study and learn in my area of substance" got the highest average score of 4.22, while the statement "Without ICT, I can overcome common misconceptions my students have around I" got the lowest average score of 3.9. The average of both was 4.10 for the English teachers' PCK, concurring with the interpretation of "agree". The teachers are very important in forming student characteristics and motivating students to succeed in learning behavior (Manasia et al., 2020). Teacher education programs ought to combine these two information bases to get ready teachers more successfully, either from a pedagogical or content-based point of see. It can clarify how content knowledge ought to be combined with pedagogical components of the teaching process.

Table 5. Pedagogical content knowledge

Pedagogical content knowledge (PCK)	Mean	Verbal Interpretation
1. "Without ICT, I can select effective teaching approaches to guide student thinking and learning in my content area."	4.22	Agree
2. "Without using ICT, I can address the common misconceptions my students have for my content area."	3.9	Agree
3. "Without using ICT, I can help my students understand the content knowledge through various ways."	4.2	Agree

Technological content knowledge (TCK)

In this century, especially the 21st century a teacher must be able to use ICT. apply skills using audio technology in the classroom. Technology has an important influence on the handling of education and learning. Some researchers have shown that technology can improve student learning (Table 6).

The table above shows the Technology Content Knowledge (TCK) of non-certified English teachers. With the highest score of 4.4, "I can leverage ICTs that are tailor-made for content areas," and the lowest score of 3.95, "I know about ICTs that can be leveraged to understand and complement my content areas," both have the explanation of "agree. " With a mean score of 4.12, teachers "agree" concerning Technology Content Knowledge.

Table 6. Technological content knowledge

Technological content knowledge (TCK)	Mean	Verbal Interpretation
1. "I know about ICT that I can use for understanding and doing my content area."	3.95	Agree
2. "I can use appropriate ICT to represent the content of my teaching."	4	Agree
3. "I can use the ICT that is created specifically for the content area."	4.4	Agree

Technological pedagogical knowledge (TPK)

One of the responsibilities of a teacher is to transfer information to students. With advances in technology, it can be a challenge for teachers to use technology as a medium for delivering learning.

The table below shows the Technology Pedagogical Knowledge (TPK) of prospective English teachers. The highest score of 4.2 which is interpreted as "agree" is "A teacher education program that made me think more deeply about how ICT impacts the educational approach I use in the classroom." The statement, "I can adapt the ICT I'm learning with special education exercises," scored a low 4.05 for the same explanation. With an average score of 4.11, the teachers "agree" with the Knowledge of Technology Pedagogy (TPK).

Table 7. Technological pedagogical knowledge

Technological pedagogical knowledge (TPK)	Mean	Verbal Interpretation
1. "I can choose ICT that enhances the teaching approaches for a lesson."	4.1	Agree
2. "My teacher education program has caused me to think more deeply about how ICT could influence the teaching approaches I use in my classroom."	4.2	Agree
3. "I am thinking critically about how to use ICT in my classroom."	4.1	Agree
4. "I can adapt the use of the ICT that I am learning about to different teaching activities."	4.05	Agree

Technological pedagogical and content knowledge (TPACK)

Technology Pedagogy and Content Knowledge is an educational framework that emphasizes the implementation of technology-integrated teaching in teacher training. TPACK is the appropriate model of a teacher in the period of current education.

Table 8 displays classroom applications of TPACK. Findings revealed an improvement in practically all TPACK knowledge areas. Based on the mean score of 3.24, practice teachers demonstrated a high level of TPACK application in the classroom. The highest mean, 4.35, was awarded to the ability to use ICT as a tool for sharing ideas and collaboratively thinking in the classroom. Teachers whose students' lives are becoming more web-based need to improve both their collaborative working environment and their ICT abilities (Patel & Thakkar, 2017). However, teachers believe that ICT enables collaborative teamwork in

general, despite their moderate ICT intelligence and minimal application (Garca-Valcárcel & Mena, 2016).

Table 8. Technological pedagogical and content knowledge

Technological pedagogical and content knowledge (TPACK)	Mean	Verbal Interpretation
1. "I can teach lessons that appropriately combine my content area, ICT, and teaching approaches."	4.25	Agree
2. "I can select ICT to use in my classroom that enhances what I teach, how I teach, and what students learn."	4.35	Agree
3. "I can use strategies that combine content, ICT, and teaching approaches that I learned about in my coursework in my classroom."	4.25	Agree
4. "I can provide leadership in helping others to coordinate the use of content, ICT, and teaching approaches at my school and/or district."	4.20	Agree
5. "I can choose ICT that enhances the content for a lesson."	4.15	Agree

Regression model

Table 9 demonstrates that the stepwise regression of the models between TPK and TCK was statistically significant. Consequently, among the independent variables, TPK and TCK had the greatest impact on the TPACK applications of non-certified English teachers. Other independent variables lacked statistical significance. TPK had a greater impact on the TPACK applications of non-certified English teachers than TCK, as shown by TPK and TCK beta values. This result is comparable to that of Inan, & Lowther's (2009) study, Modeling the teachers' TPACK perceptions, in which TCK and TPK were key indicators of TPACK implementation.

Table 9. Regression model

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-.495	.475		-1.453	.389
	TPK	1.089	.069	.767	14.224	.000
2	(Constant)	-.576	.344		-1.876	.095
	TPK	.996	.077	.570	9.890	.000
	TCK	.451	.058	.423	3.879	.000
3	(Constant)	-.456	.350		-1.716	.067
	TPK	.786	.188	.621	7.659	.000
	TCK	.354	.080	.216	4.607	.000
	PCK	.223	.072	.216	1.542	.208
4	(Constant)	-.440	.366		-1.437	.219
	TPK	.657	.108	.650	6.560	.000
	TCK	.332	.090	.345	4.351	.000
	PCK	.086	.070	.082	1.261	.276
	TK	-.079	.067	-.059	-.886	.356
5	(Constant)	-.459	.310		-1.351	.203

Model		Unstandardized Coefficients	Standardized Coefficients		
	B	**Std. Error**	**Beta**	**T**	**Sig.**
6	TPK	.886	.112	.800	5.890	.000
	TCK	.445	.067	.558	4.560	.000
	PCK	.079	.083	.085	.654	.458
	TK	-.078	.080	-.067	-.882	.489
	PK	.046	.202	.063	.878	.703
	(Constant)	-.514	.219		-1.930	.288
	TPK	.827	.160	.659	5.968	.000
	TCK	.320	.041	.423	3.848	.000
	PCK	.077	.065	.080	.801	.676
	TK	-.091	.066	-.068	-.862	.420
	PK	.056	.333	.053	.532	.754
	CK	.041	.119	.042	.408	.870

The results of this study's TPACK survey demonstrate how non-certified English teachers effectively apply their knowledge in SMP IT Nur Syamzam Kolaka. The teachers demonstrate expert knowledge in all TPACK domains. PST demonstrates the highest level of knowledge based on the mean of TK (4.28), followed by CK (4.26). While all areas of TPACK have a mean of 4.10, PCK and TPK have the lowest mean (4.11).

Using stepwise regression to analyze the data, it was determined that TCK and TPK were the most significant predictors of TPACK implementation in the classroom. TPK had a greater impact on TPACK than TCK. The ICT integration knowledge of teachers was comprised of seven components (Steelcase, 2015). However, TK, PK, CK, and PCK were not evaluated as TPACK indicators. This demonstrates that the younger generations, to whom the teachers' generation belongs, are distinguished by their technological use (Vogels, 2019).

According to the results of this research, the teachers have adequate ICT tools, but they demonstrate ingenuity when utilizing their knowledge. It is not shocking, as recent graduates of teacher preparation programs would be more tech-savvy and better equipped to include technology in classroom education (Bulman & Fairlie, 2016).

Conclusion

The research reveals that the non-certified English teachers got adequate TPACK-related skills and expertise required to use their learning in collaborating schools. This research aims to expound on the functions of TPACK in UICT throughout the teaching practices of future EFL teachers. Although the present TPACK format indicates, at least schematically, substantiated connections between domain knowledge interpreted by future EFL teachers in USN Kolaka and suggests that they all had a similar influence on the advancement of TPACK, the results indicate that the connections between TPACK elements are complicated. In terms of UICT's function in teaching practices, the framework has also been shown to be statistically accurate and trustworthy, with TPACK as the greatest indicator, accompanied by TPK and PCK.

In this research, implications and limitations are discussed. A deeper understanding of the attitudes of non-certified English teachers about TPACK may enhance the efficacy of programs that integrate technology into teaching methods. A primary objective of English language education programs should be to assist the teachers in developing a knowledge of the technological demands of the new educational system. In addition, methodological constraints should be noted while analyzing the outcomes of this research. The results and suggested model are relevant and trustworthy for the context of English language education teachers in Southeast Sulawesi. It is recommended that future research compare other locations in Indonesia and degree programs in other circumstances.

References

Alkamel, M., & Chouthaiwale, S. (2018). The use of ICT tools in English language teaching and learning: A literature review. *Veda's Journal of English Language and Literature*, *5*(2), 29-33.

Apriani, E. (2017). The misuse of ICT by students: The effects of pornography and the teacher solutions. *Tadrib: Jurnal Pendidikan Agama Islam*, *1*(02), 1-18.

Apriani, E., & Hidayah, J. (2019). The ICT used by the English lecturers for non-english study program students at STAIN Curup. *Vision: Journal of Language and Foreign Language Learning*, *8*(01), 26-37. https://doi.org/10.21580/vjv8i13280

Apriani, E., Arsyad, S., Syafryadin, S., Supardan, D., Gusmuliana, P., & Santiana, S. (2022). ICT platforms for Indonesian EFL students viewed from gender during the COVID-19 pandemic. *Studies in English Language and Education*, *9*(1), 187-202. https://doi.org/10.24815/siele.v9i1.21089

Asabere, N.Y., Togo, G., Acakpovi, A., Torgby, W.K., & Ampadu, K.O. (2017). AIDS: An ICT model for integrating teaching, learning and research in technical university education in Ghana. *International Journal of education and development using information and communication technology, 13*(3), 162-183.

Aslan, A., & Zhu, C. (2017). Investigating variables predicting Turkish pre-service teachers' integration of ICT into teaching practices. *British Journal of Educational Technology*, *48*(2), 552-570. https://doi.org/10.1111/bjet.12437

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. California: Sage Publications.

Donnelly, J. E., & Lambourne, K. (2011). Classroom-based physical activity, cognition, and academic achievement. *Preventive medicine*, *52*(Suppl 1), *S36–S42*. https://doi.org/10.1016/j.ypmed.2011.01.021

Gill, L., & Dalgarno, B. (2017). A qualitative analysis of pre-service primary school teachers' TPACK development over the four years of their teacher preparation program. *Technology, Pedagogy and Education*, *26*(4), 439-456. https://doi.org/10.1080/1475939X.2017.1287124

Gorra, V. C., & Bhati, S. S. (2016). Students' perception of use of technology in the classroom at higher education institutions in the Philippines. *Asian Journal of Education and e-Learning*, *4*(3), 92-103.

Habibi, A., Yusop, F. D., & Razak, R. A. (2020). The role of TPACK in affecting pre-service language teachers' ICT integration during teaching practices: Indonesian context. *Education and Information Technologies, 25*(3), 1929-1949. https://doi.org/10.1007/s10639-019-10040-2

Hiebert, J., Morris, A. K., Berk, D., & Jansen, A. (2007). Preparing teachers to learn from teaching. *Journal of Teacher Education*, *58*(1), 47–61. https://doi.org/10.1177/0022487106295726

Jayanthi, N. S., & Kumar, R. V. (2016). Use of ICT in English language teaching and learning. *Journal of English Language Teaching and Learning, 3*(2), 34-38.

Joo, Y. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: TPACK, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society, 21*(3), 48–59.

Koh, J. H. L., Chai, C. S., & Tsai, C. C. (2010). Examining technological pedagogical content knowledge of Singapore pre-service teachers with a large-scale survey. *Journal of Computer Assisted Learning*, *26*(6), 563–573. https://doi.org/10.1111/j.1365-2729.2010.00372.x

Lombardi, M. M., & Oblinger, D. G. (2007). Authentic learning for the 21st century: An overview. *Educause learning initiative, 1*, 1-12.

Mahdum, M. (2015). Technological pedagogical and content knowledge (TPACK) of English teachers in Pekanbaru, Riau, Indonesia. *Mediterranean Journal of Social Sciences*, *6*(5), 168-168.

Malik, S., Rohendi, D., & Widiaty, I. (2019). Technological pedagogical content knowledge (TPACK) with information and communication technology (ICT) integration: A literature review. *Proceedings of the 5th UPI International Conference on Technical and Vocational Education and Training (ICTVET 2018)*. https://dx.doi.org/10.2991/ictvet-18.2019.114

Mei, B., Brown, G. T., & Teo, T. (2018). Toward an understanding of preservice English as a foreign language teachers' acceptance of computer-assisted language learning 2.0 in the people's Republic of China. *Journal of Educational Computing Research*, *56*(1), 74–104. https://doi.org/10.1177%2F0735633117700144n

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record: The Voice of Scholarship in Education*, *108*(6), 1017–1054.

Pardede, P. (2020). Secondary school EFL teachers' perception of ICT use in learning and teaching: A case study in Greater Jakarta. *Journal of English Teaching*, *6*(2), 144-157.

Parsons, D., MacCallum, K., Schofield, L., Johnstone, A., & Coulter, S.K. (2020). Next-generation digital curricula for future teaching and learning. In S. Yu, M. Ally, & A. Tsinakos (Eds.), *Emerging technologies and pedagogies in the curriculum* (pp. 3–19). Singapore: Springer. https://doi.org/10.1007/978-981-15-0618-5_1

Ratheeswari, K. (2018). Information communication technology in education. *Journal of Applied and Advanced Research*, *3*(1), 45-47. https://doi.org/10.21839/jaar.2018.v3iS1.169

Richards, K. (2003). *Qualitative inquiry in TESOL*. Singapore: Springer.

Seliaman, M. E., & Al-Turki, M. S. (2012). Mobile learning adoption in Saudi Arabia. *World Academy of Science, Engineering, and Technology*, *6*(9), 391-293. https://doi.org/10.5281/zenodo.1077106

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, *15*(2), 4–14. https://doi.org/10.3102%2F0013189X015002004

Tallvid, M., Lundin, J., & Lindström, B. (2012). Using TPACK for analysing teachers' task design – understanding change in a 1:1-laptop setting. In P. Resta (Ed.), *Proceedings of SITE 2012--Society for Information Technology & Teacher Education International Conference* (pp. 4773-4780). Austin, Texas, USA: Association for the Advancement of Computing in Education (AACE).

Tristiana, N. E., & Rosyida, E. (2018). Students' perception on the integrating of information and communication technology (ICT). *English Education: Jurnal Tadris Bahasa Inggris*, *11*(1), 35-44.