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Scrutinizing EFL Teachers' TPACK Mastery Level in Teaching English Based on Gender and Schools Status Disparities

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ABSTRACT

The existing technologies have profoundly influenced technology integration in teaching activities. However, integrating technology into English Language teaching is not entirely smooth since the teachers are not skilled in combining technology with content and pedagogy knowledge simultaneously in the learning process. Therefore, this study attempted to investigate the level of technological pedagogical content knowledge (TPACK) mastery from junior high school EFL teachers in Pangkajene and Kepulauan Regency based on teachers' gender and school status. The quantitative study with a survey method addressed the research's aim. The research conducted in Pangkajene and Kepulauan Regency involved 104 junior high school EFL teachers as research respondents. The data of this study were collected from in-service EFL teachers in public and private junior high schools by distributing the questionnaire offline and online. Version 26 of SPSS was employed to analyze the data. The analysis of the data encompassed inferential and descriptive statistics. The present study results elucidated that EFL teachers' TPACK mastery is in the very good category, with details of TK, TCK, PCK, and TPK in the very good category; CK and TPACK in the good category. Next, EFL teachers' TPACK mastery based on gender showed no significant difference in TPACK mastery between male and female teachers. Then, EFL teachers' TPACK mastery based on school status showed no significant difference in TPACK mastery between teachers in public schools and private schools. These results imply that EFL teachers' TPACK knowledge and mastery are related to the proper implementation of ICT in classroom instruction.

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1. INTRODUCTION

Due to technological advancements, the urge to use technology in teaching and learning activities has increased (Sulaiman, Sarhandi & Buledi, 2017; Joo, Park & Lim, 2018). The EFL (English as a Foreign Language) instruction criteria are considerably more stringent due to the correlation between technology and teachers' collaboration. Numerous instructors argue that technology incorporated into the classroom empowers them to effectively aid the learning process and solve teaching and learning issues (Chamorro

& Rey, 2013). Additionally, the majority of studies feel that technology has been a crucial educational tool. Given the prominence of technology, it is evident that English instruction must incorporate technology.

Technology integration in the classroom is characterized by the efficient and effective application of technology to all learning and teaching processes. In today's dynamic world, using technology in English instruction is essential since it offers a multitude of benefits if employed properly. These perceived benefits range from raising motivation to supporting autonomous learning, problem-solving skills, invention and creativity, interaction, and enhancing teamwork and communication (Azmi, 2017: 111). In addition, technological integration may infuse the learning environment with originality, creativity, interest, and pleasure (Leong, A, C et al., 2019: 100).

The teacher should own a mastery of technology because, in Permenristekdiktik No. 55 of 2017 concerning teacher education standards, it is stated that for the learning achievement of graduates of undergraduate education and professional education programs, teachers have to be prepared to use the information and communications technologies in planning, implementation, evaluation, and management of learning, in addition, they must be able to use information, communication and technology skills in scientific advancement and application of specialized knowledge, as well as master the merging of technologies, pedagogic, and scientific material.

However, the integration of technology into English Language teaching was not seamless, as teachers lacked the ability to combine technology with content and pedagogy expertise simultaneously in the learning process (Absari et al., 2020: 2; Cheng & Xie, 2018: 98). Many teachers encounter problems with technology utilization in the classroom's teaching and learning process. It has been accepted that technology incorporation is "complex, multifaceted, and contextual" (Mishra & Koehler, 2006). Teachers just learn about technology, not how to utilize it, because they lack expertise and skills in integrating technology into teaching-learning activities. In accordance with this, Rahiem's research (2020: 6127) highlighted a number of obstacles for teachers to integrate technology. These obstacles include incompatible equipment, limited connectivity, inconsistent connections, lack of experience, and a lack of ICT literacy. Therefore, the data presented in this section indicates that providing instructors with access to devices and software will not make it simpler for them to utilize technology.

Teachers must have the knowledge required to implement technologies in the classroom (Xie, Cheng, and Luthy, 2017: 1068). In addition, teaching English with technology necessitates a framework that explains how rapidly and adaptably technologies can be successfully integrated with a variety of instructional strategies and topic areas (Koehler et al., 2013: 2). Teachers must be able to align the curriculum and instruction with the appropriate technologies. Therefore, Mishra and Koehler's (2006) proposed technological pedagogical content knowledge (TPACK) should be required for effective technology use in education, particularly in English Language Teaching.

The TPACK model describes the constructs that entail teachers to teach with technology, and the deployment of TPACK in the classroom is very complex. These knowledge domains engage with each other. Mishra and Koehler (2006) formulated a theoretical framework, TPACK, to explain the positive relationship between content, pedagogy, and technological knowledge. Technological knowledge (TK) is the teachers' ability to use various technologies to design instruction. Pedagogical knowledge (PK) means employing specific teaching strategies to enhance students' learning. Content knowledge (CK) is linked with their subject-matter knowledge and skills; Technological pedagogical knowledge (TPK) adverts to their capability to use technology-enhanced teaching strategies; Technological content knowledge (TCK) adverts to their comprehension of the way to utilize technology to enhance students' learning. Teachers' pedagogical content knowledge (PCK) is defined as their ability to employ various teaching strategies to represent the subject matter. In contrast, their technological pedagogical and content knowledge (TPACK) entails assisting students in acquiring content through specific teaching strategies and technologies.

The success of this application depends on many factors, one of which is the teacher. Teachers have a central role in regulating learning activities in the classroom. Each teacher has different characteristics that affect the learning process to be carried out. The teacher's personality can influence the way teachers teach and integrate

ICT into learning. The individual criteria encompassed age, teaching experience, gender, technology utilization, teaching courses, educational credentials, and teaching levels (Cheng & Xie, 2018: 100).

Gender is one of the characteristics that can affect the ability of teachers to apply ICT. Gender identity refers to a person's intensely felt, internal, and distinctive sense of gender, which may or may not correspond with their physiology or assigned sex at birth. In education, the personalities of male and female teachers differ; male teachers are typically more authoritative while presenting lessons to students, while female teachers tend to employ softer language and more friendly attitudes. Due to individual variances in emotional intelligence, not all male and female teachers have the same characteristics and talents when it comes to teaching children (Rachman & Tjalla, 2008). Numerous studies (Lin et al., 2013; Ekrem & Recep, 2014; Cheng & Xie, 2018) show that males typically have a greater sense of technological consciousness than females. The research indicates that the distinction in the character traits of male and female teachers can affect the integration of ICT in learning. However, this needs to be studied more deeply, especially in EFL.

Apart from the teacher's background, school background factors can also affect the ability of teachers to integrate ICT, which can be reflected in teacher TPACK, such as school status. In Indonesia, schools can be distinguished based on school status, namely state and private schools. The government manages state schools directly, while foundations manage private schools. The government has more direct authority in regulating schools than private schools. The administrative structure of state schools is centred on the government, causing intervention in everything, including the curriculum (Sinaga, 2017).

Differences in school status also impact the availability of ICT aids for learning. The study results found by Zia, Naz, & Qureshi (2017: 131-134) and Asaolu & Fashanu (2012: 2) find that private schools' ICT resources are more comprehensive and accommodating of students' activities in accessing new information than public schools. Although the completeness of technology facilities and equipment, Moore (2012: 100) states that not all educators employ them in the instructional process. Therefore, the impact of differences in the existence of ICT resources in public and private schools and differences in autonomy in learning management on the ability of teachers to implement TPACK needs to be studied further.

The effect of gender and school status together affects teacher performance satisfaction (Zafar et al., 2018: 48). This distinction between male and female teachers in the state and private schools requires further study of its effect on the ability of teachers' TPACK in planning and the learning process, especially for junior high school English teachers. Recently, many papers have already been written on EFL teachers' TPACK (e.g., Solak and Çakir, 2014; Öz, 2015; Kwangsawad, 2016; Ershan, 2016; Joo, Park & Lim, 2018; Redmond & Lock, 2019; Singh & Kasim, 2019). However, those studies have no information regarding the differences in TPACK ability of EFL teachers by gender and school status. Besides, those studies focus only on pre-service teachers' TPACK. Few empirical research has targeted in-service EFL teachers. Since technology incorporation occurs in the classroom, the TPACK of in-service EFL teachers' who are professionally employed in schools should be assessed.

To fill the void in TPACK research in the EFL field, it is necessary to investigate how gender and school status influence the TPACK mastery level of secondary EFL instructors in teaching English. Therefore, this research scrutinized the TPACK mastery level between male and female in-service EFL teachers at the secondary level in public and private schools. The relevance of this paper is to support the development of EFL teachers' competency through TPACK development.

2. METHODS

2.1 Research design

This study was a quantitative study using a survey method. The survey method was chosen because of its suitability to reach the study's objectives. This study aimed to provide an overview of the mastery of English teachers' TPACK in the learning process through a research questionnaire. The survey design allows the researcher to collect a large amount of data reasonably straightforwardly and naturally conveys the questionnaire results. Quickly obtaining a high number of responses allows the researcher to work with voluminous amounts of data.

2.2 Research site, time and participants

To obtain data and information related to the problem under study, the researcher surveyed by distributing questionnaires to junior high school EFL teachers in Pangkajene and Kepulauan Regency. This research was carried out from March to April 2022. The sample that became the respondents in this study was 110 people from the total population. The total number of EFL teachers for junior high schools in Pangkajene and Kepulauan Regency is 150. Data on the number of teachers was obtained directly from the Pangkajene and Kepulauan Regency education office and reconfirmed by the head of English MGMP of Pangkajene and Kepulauan Regency. Furthermore, simple random sampling (Sugiyono, 2019: 129) was used to select the samples.

2.3 Instruments of the Data Collection

The survey questionnaire with a close-ended question on a variable of TPACK for the EFL context was employed to explore the junior high school in-service EFL teachers' TPACK mastery. The TPACK survey questionnaire was adopted from Bostancioglu and Handley (2018), and the whole items have been developed and validated. Respondents were required to select replies by placing an index in the appropriate column on the research questionnaire sheet. The questionnaire has 36 Likert-scaled statement items representing the TPACK components. Strongly Agree, Agree, Disagree, and Strongly Disagree are the four possible responses for any instrument employing the Likert scale (Sugiyono, 2016: 135). In this questionnaire, respondents were asked to indicate one of the numbers ranging from 1 to 4.

2.4 Validity and Reliability of the Instruments

All Composite Reliability (CR) values are greater than 0.70, suggesting that the questionnaire is credible; All levels of Average Variance Explained (AVE) are greater than 0.50, demonstrating convergent validity; and the square root of the AVE values for each factor exceeds the inter-factor correlations and the Maximum Shared Variance (MSV), suggesting discriminant validity (Hair et al., 2010). In addition, the validation of the instrument was also carried out with face validity, namely by testing the validity of the appearance through expert judgment. This validity aimed to assess the format of the instrument's appearance and the suitability of the items in the instrument to measure the instrument. Aspects assessed include aspects of the material, construction, and language. This validation was carried out drew on expert judgment, and there were two lecturers and five EFL teachers.

2.5 Techniques of Data Analysis

Version 26 of SPSS was used to analyze the data. The normality test was carried out with the Kolmogorov Smirnov test on the data before processing, and the homogeneity test using the Homogeneity of Variance tests technique. The data is said to be normal and homogeneous if the significance value is > 0.05. The normality and homogeneity test results indicated that the data were homogeneous and normally distributed, so the parameterized analysis was used in this study. Data were analyzed by descriptive and inferential statistics.

Descriptive statistical analysis provided an overview of the TPACK mastery of EFL teachers in Pangkajene and Kepulauan Regency by looking at the mean, minimum score, maximum score, standard deviation, and percentage score of teachers' TPACK mastery based on the questionnaire's results. Inferential statistical analysis was done with a MANOVA test to see whether or not there was a difference in the TPACK mastery of EFL Teachers based on teachers' gender and school status. Furthermore, a Multivariate Analysis of Variance (MANOVA) analysis was also carried out to see whether or not there are differences in TPACK mastery based on gender factors in-school status.

In the questionnaire instrument, the total score obtained was converted into a value. The maximum value obtained was 100, which is calculated by the following formula:

$$\mathbf{P} = \frac{f}{N} x \mathbf{100}$$

with:
P = Total Score
f = Score Obtained
N = Maximum Score

The values were then compared with the interpretation criteria to determine the English teachers' TPACK category. The interpretation criteria are presented in the following table.

Table 1. Criteria of EFL Teachers' TPACK

Total Score	Criteria
≤ 35	Very Poor
36 – 51	Poor
52 – 67	Fairly Good
68 – 83	Good
84 -100	Very Good

(Arikunto, 2011: 236)

3. FINDINGS AND DISCUSSION

This study examined the mastery of TPACK of junior high school EFL teachers. The measured TPACK mastery includes the aspects of TK, CK, PCK, TCK, TPK, and TPACK. This study was conducted in 114 junior high schools in Pangkajene and Kepulauan Regency, with 104 respondents who filled out and returned the questionnaire out of 110 respondents in this study.

Table 2. Demographics Information of Research Respondents

No	Characteristics	Category	Total	Percentage (%)
1	Gender	Male	27	26
		Female	77	74
2	School Status	State	84	80.8
		Private	20	19.2
3	Certification Status	Certified	66	63.5
		Not Certified yet	38	36.5
4	Educational Level	Bachelor Degree	93	89.4
		Master Degree	11	10.6
5	Employment Status	*ASN*	57	54.8
		NON – ASN	47	45.2
6	Years of Teaching	1 – 5	16	15.3
		6 – 10	18	17.3
		11 – 15	35	33.7
		16 +	35	33.7

Table 2 shows that out of a total of 104 respondents, the respondents were dominated by 74% female teachers, 80.8% state junior high schools, 63.5% certified teachers, 89.4 undergraduate teachers, 54.8% ASN teachers, and 33.7% teachers who have taught for more than 10 and 16 years. Furthermore, before the data were analyzed, the normality and homogeneity tests were done to evaluate the normality and homogeneity of the data distribution. Below are the outcomes of the data's normality and homogeneity tests.

Table 3. The Results of the Normality and Homogeneity Test

Components	Normality Test	Homogeneity Test for Gender Factor	Homogeneity Test for School Factor
	Sig. (2-tailed)	Sig. (2-tailed)	Sig. (2-tailed)
TK	0.059	0.491	0.865
CK	0.089	0.695	0.921
PCK	0.056	0.792	0.993
TCK	0.101	0.901	0.864
TPK	0.083	0.702	0.932
TPACK	0.067	0.975	0.938

Table 3 shows the significant value of all TPACK components in the normality and homogeneity test of data > 0.05. As a result, on the basis of the normality and homogeneity test, it is reasonable to infer that the research data were normally distributed, and the data variance was the same or homogeneous, so the test was carried out parametric.

3.1 The Level of TPACK Mastery of Junior High School EFL Teachers in Pangkajene and Kepulauan Regency

Table 4. Descriptive Data of TPACK Mastery Level of Junior High School EFL Teacher

Components	Statistics				
	Minimum Score	Maximum Score	Standard Deviation	Mean	Criteria
TK	71	100	9.689	86.14	Very Good
CK	60	100	12.352	79.42	Good
TCK	75	100	8.460	87.02	Very Good
PCK	71	100	8.907	85.30	Very Good
TPK	71	100	9.597	86.38	Very Good
TPACK	67	100	10.004	82.89	Good

From Table 4 above, it is known the highest level of mastery of junior high school EFL teachers' TPACK in Pangkajene and Kepulauan is mastery of technological knowledge and content (TCK), with a mean score of 87.02. In contrast, the lowest level of mastery of EFL Teachers in SMP in Pangkajene and Kepulauan is mastery of knowledge of English Content (CK), with a mean score of 79.42. The questionnaire results containing 6 TPACK components described the CK and TPACK of junior high school EFL teachers as good criteria, while TK, TCK, PCK, and TPK EFL teachers met the very good criteria.

The findings of this study were congruent with those of several other investigations (Ozdemir, 2016; Makkawa et al., 2021; and Nuangchalerm, 2020). It was clearly explained that the participants have enough technology integration preparedness. They profited from TPACK in achieving learning objectives and innovating the learning process. They incorporated TPACK by taking technology, content, and pedagogy into account. These three combined types of knowledge helped them plan the lesson, teaching approaches, and numerous classroom technologies.

However, the TCK level was the highest in this study. In contrast to Bas and Senturk (2018), their TCK level was understood to be rather low than the other components. Also, the result on the CK component was contrasted with several studies. This present study found CK at the lowest among the other components. Meanwhile, the majority of studies placed CK at a high level in implementing

TPACK in teaching (Surayya, 2020; Mukminin, 2020; Aniq and Drajati, 2019). These empirical studies indicated that subject matter expertise had the biggest impact on TPACK.

3.2 The Level of TPACK Mastery of Junior High School EFL Teachers Based on Teachers' Gender

Table 5. Mastery of EFL Teachers' TPACK Based on Gender Differences

Component	Teachers' Gender	N	Mean	Criteria	Sig. 2 tailed
TK	Male	27	89.28	Very Good	0.905
	Female	77	86.85	Very Good	
CK	Male	27	83.15	Good	
	Female	77	80.41	Good	
TCK	Male	27	89.58	Very Good	
	Female	77	87.94	Very Good	
PCK	Male	27	87.96	Very Good	
	Female	77	86.01	Very Good	
TPK	Male	27	89.38	Very Good	
	Female	77	87.02	Very Good	
TPACK	Male	27	85.86	Very Good	
	Female	77	83.63	Good	

Based on the outcomes of each component provided in Table 5, the data showed that male teachers have more control over TPACK than female teachers at the junior high school level. Male teachers obtained the highest TPACK mastery, specifically on Technological Content Knowledge (TCK) mastery, with a mean score of 89.58. Meanwhile, female teachers got the lowest level of TPACK mastery, specifically on the Content Knowledge (CK) component, with a mean score of 80.41.

However, the results of the multivariate analysis of the variance of TPACK based on gender obtained a value of sig. 0.905 > 0.05, as a result, it can be determined, based on the multivariate analysis of variance, that Ho is accepted and Ha is rejected. Consequently, there is no substantial difference between male and female teachers in their level of TPACK mastery. Therefore, it can be inferred that there are no gender differences in EFL teachers' TPACK mastery.

This finding is corroborated by Cheng and Xie (2018), Hidayati et al. (2018), and Saricoban et al. (2019). According to these studies, males appear to exhibit greater self-efficacy in technology use than females. The results showed that female EFL Teachers in junior high schools are typically less knowledgeable in their use of technology than their male colleagues.

However, the data of the inferential analysis demonstrated that overall (covering six components), there was no significant difference in the level of mastery of TPACK between male and female English teachers. So, it can be said that the teacher's knowledge does not differ based on the gender of the teacher. These results are consistent with several other studies showing that gender does not affect the ability of PK, CK, PCK, TCK, and TPK is not significantly different from gender (Oz, 2015: 125-126; Hosseini & Kamal, 2013: 4; Makawawa et al., 2021:). Also, Bas and Senturk (2018) revealed no significant statistical difference between in-service teachers' level of TPACK to gender in PK, CK, TPK, and TCK.

Furthermore, Varank (2007: 78) explains that gender only affects attitudes towards ICT but does not affect the ICT abilities of men and women. This result is in line with the test results where there is no significant difference in knowledge of technology (TK) between female and male teachers. This condition shows that the gap in ICT use between women and men is decreasing. Several studies have shown no significant relationship between gender and ICT (Sahin & Akcay, 2011: 471; Elsaadani, 2012:

26; Semerci & Aydin, 2018: 101). In this era, both women and men can easily access technology, and the increasing number of women who use ICT also causes the gap in the use of ICT by gender to decrease.

3.3 The Level of TPACK Mastery of Junior High School EFL Teachers Based on School Status

Table 6. Mastery of EFL Teachers' TPACK based on School Status

Component	School Status	N	Mean	Criteria	Sig. 2 tailed
TK	State	84	85.81	Very Good	0.467
	Private	20	90.32	Very Good	
CK	State	84	79.04	Good	
	Private	20	84.52	Very Good	
TCK	State	84	86.60	Very Good	
	Private	20	90.92	Very Good	
PCK	State	84	85.03	Very Good	
	Private	20	88.94	Very Good	
TPK	State	84	86.07	Very Good	
	Private	20	90.32	Very Good	
TPACK	State	84	82.53	Good	
	Private	20	86.95	Very Good	

Based on table 6 above, the data showed that private school teachers have more control over on all components of TPACK. Private teachers obtained the highest level of TPACK mastery, specifically on Technological Content Knowledge (TCK) mastery, with a mean score of 90.92. Meanwhile, state teachers obtained the lowest level of TPACK mastery, specifically on the Content Knowledge (CK) component, with a mean score of 79.04. Furthermore, the results of the multivariate analysis of variance of TPACK based on school status obtained a sig value of 0.467 > 0.05, as a result, it can be determined, based on the multivariate analysis of variance, it can be concluded that H_o is accepted and H_a is rejected, meaning that there is no significant difference in the level of mastery of the TPACK in state and private schools. Therefore, it can be concluded that teachers' TPACK mastery is not differentiated based on school status.

The test results (table 6) show private school teachers have higher mean scores on all components of TPACK. This discovery is aligned with Qureshi's research findings (2013: 1745), which show that the education system in private schools has implemented ICT to provide challenging, creative learning and develop students' higher-order thinking skills. Furthermore, Qureshi explained that in state schools, the implementation of ICT is still constrained by the lack of ICT tools. Also, Asaolu and Fashanu (2012: 2) show that the level of proficiency in ICT in private schools is twice as high as in public schools. This result is due to teachers in private schools continuing to encourage students' performance to adopt ICT where different conditions are found in public or state schools.

However, Andoh found different results, and Issifu (2015: 1286) shows that public or state school learning in Ghana involves more ICT than private schools. Students in public schools often use ICT to support learning more than students in private schools. This result was unexpected as most private schools in Ghana have more resources on technology than public schools.

Moreover, the results of the MANOVA test showed no significant difference between state and private school teachers, so the TPACK mastery is not differentiated based on the status of the school where the teacher teaches. The results of this study follow the research of Gusen, Dakur, & Shamle (2017: 43) and Lalitha & Prasad (2014: 46), who found that there was no difference in the level of ICT application in learning activities between teachers teaching in public or private schools. It should be known that teachers and students in private and public schools already have their ICT tools so that the

differences in the availability of ICT and infrastructure in schools do not become a barrier to their application in learning.

Ayeni and Ogunbameru (2013) found that teachers in Ondo State's public secondary schools infrequently utilized ICT facilities for instruction. Most teachers believed there was an inadequate supply of computer hardware and software, an unreliable power supply, few chances for teacher training, and a low level of institutional engagement with professional and corporate organizations for technical support. The finding is also in line with Achimugu, Oluwagbemi, and Oluwaranti (2010), whose study revealed that Nigeria's public institutions lack adequate ICT facilities.

4. CONCLUSION

Based on the research results on the mastery of EFL teachers' TPACK and its relation to the variables of teacher gender and school status, it can be concluded that EFL teachers' TPACK mastery based on this study's findings was in the very good category with details of TK in the very good category, CK in the good category, TCK in the very good category, PCK in the very good category, TPK in the very good category, and TPACK in the good category. Next, mastery of EFL teachers' TPACK based on gender demonstrated that male teachers have a greater mean score than female teachers on all components, with details of TK, TCK, PCK, and TPK being very good. In comparison, the CK and TPACK components are in a good category. EFL teachers' TPACK mastery by gender showed no significant difference in TPACK mastery between male and female teachers. Next, mastery of EFL teachers' TPACK based on school status showed teachers in private schools have a higher mean score than teachers in state schools with details of the TK, TCK, PCK, and TPK components in the very good category, and the CK and TPACK component in the good category. EFL Teachers' TPACK mastery based on school status showed no significant difference in TPACK mastery between teachers in the state and private schools.

Nonetheless, this study was limited to the method used, which has not revealed the TPACK mastery of EFL teachers in more depth. This study was conducted utilizing a quantitative research approach. Even if such quantitative data is seen as useful for drawing inferences, it is also deemed essential to collect qualitative data in order to better comprehend the causes underlying these results. Understanding the truth of the results obtained from a study is greatly facilitated by combining quantitative and qualitative data. In other words, the subsequent researchers are expected to carry out mixed-method.

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