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## Navigating the Digital Shift: Unveiling the TPACK Landscape among EFL Educators in Indonesia

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**Sukarno<sup>1\*</sup>, Maria Vineki Riyadini<sup>2</sup>, Yasir Alsamiri<sup>3</sup>**  
Universitas Negeri Yogyakarta, Indonesia<sup>1,2</sup>  
Islamic University of Madinah<sup>3</sup>  
Email Correspondence: [sukarno@uny.ac.id](mailto:sukarno@uny.ac.id)

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### Abstract

**Background:**

Enhancing English language learning activities can be achieved by integrating Technological Pedagogical Content Knowledge (TPACK). However, not all EFL teachers, particularly those participating in Indonesia's Teacher Professional Education Program (PPG), effectively harness TPACK to optimize their teaching methods. This study aims to explore TPACK proficiency among EFL teachers, emphasizing the disparities influenced by gender and school status, to guide targeted professional development strategies.

**Methodology:**

This study, conducted in 2023, was carried out by English Language Education study program lecturers who teach in the PPG. It employed mixed-method research to investigate TPACK mastery among 285 EFL teachers. A comprehensive research questionnaire was developed and administered to assess TPACK proficiency, focusing on gender and school status as potential differentiators.

**Findings:**

The study delves into integrating TPACK dimensions in EFL teaching, revealing gender-neutral proficiency levels but significant disparities based on school status. While male and female teachers exhibited similar TPACK mastery, state schoolteachers demonstrated higher proficiency, indicating the influence of school context. Tailored professional development initiatives are crucial to address these disparities and foster effective technology integration in ELT, necessitating collaborative efforts among stakeholders to overcome challenges and promote innovative pedagogical practices conducive to modern learning environments.


**Conclusion:**

This study illuminates EFL teachers' TPACK mastery and obstacles and prospects. While ICT integration is difficult, the TPACK framework offers potential ways to create engaging learning environments. Successful implementation requires overcoming instructional challenges and maintaining stakeholder support. To maximize teaching and learning, educators must adapt their methods to technology.

**Originality:**

The study fills a knowledge gap by examining EFL teachers' TPACK proficiency, providing insights into gender and school status differences, and insights on challenges and opportunities. Given the prevalent use of technology in education, it is imperative to assess TPACK among professionally employed EFL teachers.

**Keywords** : English Language Teaching; EFL Teacher; TPACK; Navigating; Digital Shift

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## 1. INTRODUCTION

Technological Pedagogical Content (TPACK) has attracted significant attention in establishing competencies for English as a foreign language (EFL) teacher. Several studies have investigated the application of Technological Pedagogical Content Knowledge (TPACK) in EFL instruction. Notably, [Alhamid & Mohammad-Salehi \(2024\)](#) and [Genç & Dülger \(2024\)](#) researched to examine the correlation between instructors' proficiency in TPACK and their attitudes towards online teaching. [Basori et al. \(2023\)](#) and [Saputra & Margana \(2023\)](#) show a connection between TPACK elements and the utilization of information and communication technology (ICT) in EFL teaching approaches. This emphasizes the significance of incorporating Technological Pedagogical Content Knowledge (TPACK) into instructional methods to improve learning effectiveness.

Moreover, [Abubakir & Alshaboul \(2023\)](#) and [Su \(2023\)](#) highlighted the significance of TPACK proficiency in writing courses and its role in enhancing teachers' digital literacy amidst the COVID-19 epidemic. The significance of employing appropriate evaluation instruments to measure TPACK integration in teacher education cannot be overstated ([Ali & Waer, 2023](#); [Budianto et al., 2023](#)). This study enhance comprehension of TPACK and its implementation in teaching English as a foreign language, promoting more effective utilization of technology in the learning process.

Gaining a comprehensive understanding of teachers' proficiency in Technological Pedagogical Content Knowledge (TPACK) is essential for effectively tackling educational difficulties. The need to integrate information and communication technology (ICT) in education is underscored by the presence of educational standards ([Azmi, 2017](#); [Dalal et al., 2017](#)). The TPACK framework, proposed by [Mishra & Koehler \(2006\)](#) assisted bridge the gap between affordable technology and its practical use in the classroom. It enables more innovative and effective teaching and learning. A number of studies have emphasized the significance of Technological Pedagogical Content Knowledge (TPACK) for EFL teachers. This includes its role in Teacher Professional Development, Integration of Technology in Education, fostering an engaging teaching environment, and promoting the development of thinking skills ([Abubakir & Alshaboul, 2023](#); [Alhamid & Mohammad-Salehi, 2024](#); [Basori et al., 2023](#); [Genç & Dülger, 2024](#)).

This study delves into the intricate interplay of TPACK dimensions, recognizing the multifaceted nature of their integration within the classroom context ([Cheng & Xie, 2018](#)). Gender, as a significant variable, has been identified as influencing technological

consciousness and subsequently impacting ICT integration (Cheng & Xie, 2018; Ekrem & Recep, 2014; Lin et al., 2013). Moreover, disparities in school status, particularly between state and private institutions, pose distinct challenges affecting ICT resources and instructional autonomy, warranting further investigation (Asaolu & Fashanu, 2012; Zia et al., 2017).

Given the absence of comprehensive studies on in-service EFL teachers' TPACK proficiency, this research endeavors to fill this gap by focusing on EFL teachers across Indonesia attending the Teacher Professional Education Program (PPG) in Yogyakarta. Through a meticulous examination of TPACK mastery based on gender and school status, this research aims to contribute nuanced insights to the discourse on effective technology integration in English language teaching, informing future pedagogical practices and professional development initiatives.

## 2. LITERATURE REVIEW

### 2.1 TPACK in ELT

TPACK, an acronym for Technological Pedagogical Content Knowledge, extends Shulman's Pedagogical Content Knowledge (PCK) framework, emphasizing educators' ability to seamlessly integrate technology into instructional methodologies (Shulman, 1986). While Content Knowledge (CK) pertains to mastery of subject matter, encompassing substantive aspects and organizational intricacies, Pedagogical Content Knowledge (PCK) entails knowledge essential for effective teaching, including diverse instructional strategies and the transformation of subject matter into pedagogically meaningful representations (Chai et al., 2013; Shulman, 1986; Taopan, 2020). TPACK thus illuminates the dynamic interplay between technological, pedagogical, and content knowledge, highlighting the multifaceted nature of effective teaching in contemporary educational settings as depicted in this following figure.

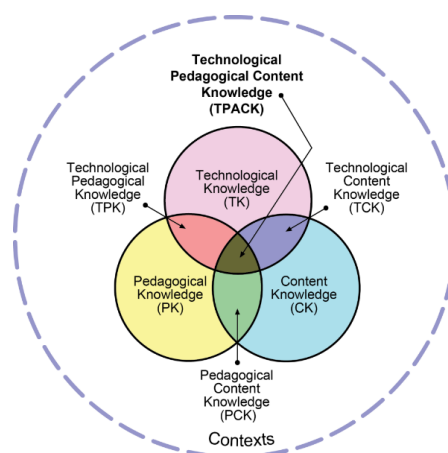


Figure 1: The components of the TPACK framework (figure taken from <http://tpack.org>)

Mishra & Koehler (2006) propose the Technological Pedagogical Content Knowledge (TPACK) framework, which emphasizes the critical role of three core knowledge domains: Technology Knowledge (TK), Pedagogy Knowledge (PK), and Content Knowledge (CK). TK refers to educators' proficiency in utilizing educational technologies, while PK involves understanding effective learning processes and pedagogical approaches. In alignment with Shulman, (1986) conceptualization, CK entails a deep understanding of the subject matter. Within this framework, four additional categories of knowledge emerge: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and Technological Pedagogical Content Knowledge (TPCK) (Mishra & Koehler, 2006; Mishra & Mehta, 2017; Taopan, 2020). TCK focuses on transforming subject matter into engaging representations, while TPK explores how technology can enhance learning environments and pedagogical processes. Lastly, TPCK integrates technology to represent content meaningfully, fostering conducive conditions for effective learning.

## ***2.2 Critical Roles of Pedagogy and Content Knowledge in Effective EFL Teaching***

In EFL teaching, the fusion of pedagogy and content knowledge is a cornerstone for effective instructional practices. Pedagogical Content Knowledge (PCK), as envisioned by Shulman (1986), melds pedagogical strategies with subject matter expertise, essential for guiding learners through the intricacies of language acquisition (Chai et al., 2013; Shulman, 1986; Taopan, 2020). For instance, employing communicative language teaching (CLT) strategies fosters authentic language use and meaningful interactions, enhancing students' communicative competence (Richards & Rodgers, 2001, 2014).

Content knowledge in EFL teaching extends beyond linguistic structures to encompass cultural nuances and contextual elements embedded within language usage. Proficient EFL teachers adeptly navigate language complexities, scaffold learners' understanding, and design context-based activities to promote language transfer and application (Celce-Murcia et al., 1997, 2001). Integrating literature from diverse cultural backgrounds exposes learners to varied perspectives and nurtures intercultural competence, exemplifying the symbiosis between content knowledge and effective pedagogy (Bloemert et al., 2019; Hossain, 2024).

The synergy between pedagogy and content knowledge is found in task-based language teaching (TBLT), where EFL teachers design tasks aligned with language learning objectives and tailored to learners' linguistic needs and interests (Bryfonski, 2021; Crookes & Ziegler, 2021; Khezrlou, 2023). Performance-based assessments, informed by pedagogical insights and

aligned with language learning objectives, provide valuable feedback to learners and inform instructional decision-making, ensuring a holistic approach to language development (Eslit, 2023; Kiran, 2023). Integrating pedagogy and content knowledge underpins effective EFL teaching, fostering engaging learning experiences and nurturing learners' language proficiency in diverse educational settings.

### ***2.3 The Concepts of Gender***

Gender, as defined by the World Health Organization (WHO), encompasses socially constructed attributes associated with being male, female, or intersex, including roles, norms, and behaviors (DuBois & Shattuck-Heidorn, 2021; Lindqvist et al., 2021). Differences in teaching styles between male and female educators are often observed in educational settings. While male teachers tend to adopt a more authoritative approach, female teachers often employ softer language and foster friendlier environments (Kite et al., 2022; Wood & Fixmer-Oraiz, 2019). However, these differences can vary based on individual emotional intelligence.

Despite the interchangeability of gender traits, specific disparities persist, impacting individuals' roles, responsibilities, and behaviors (Ghavifekr et al., 2006). These gender distinctions can also influence educators' attitudes, abilities, and the use of information and communication technology (ICT) (Lawrence & Tar, 2018; Lindqvist & Pettersson, 2019). For instance, male teachers are reported to utilize ICT more frequently than their female counterparts (Daramola, 2022; Gilbert et al., 2015). However, attitudes toward computers can vary, with women often exhibiting less favorable views (Scherer et al., 2021; Tondeur et al., 2016). Nonetheless, research outcomes regarding gender differences in ICT usage can be contradictory, with some studies indicating higher computer proficiency among men (Goswami & Dutta, 2015), while others suggest greater ICT utilization among female teachers (Wiseman et al., 2018). These variations underscore the complex interplay between gender, ICT adoption, and teaching practices.

Understanding gender distributions in ICT-related fields among secondary school teachers is crucial for promoting equitable ICT utilization in education. This knowledge can inform policymakers and stakeholders, facilitating gender-sensitive initiatives within the education sector for the benefit of society at large.

### ***2.4 School Status***

Schools are classified into state and private institutions with distinct characteristics and funding sources. In the United States, public schools are government-funded and open to all students, while private schools are fee-paying institutions managed independently. Conversely,

in the UK, public schools, such as Eton College, are prestigious fee-paying institutions, while state schools offer free education (Kishan, 2021).

In Indonesia, state schools are established and funded by the government, while private schools, established by the community, require tuition fees (Pemerintah Republik Indonesia, 2014). State schools follow a secular curriculum, while private schools may have religious affiliations and greater autonomy in curriculum development (Hendajany, 2016; Sondakh et al., 2022). Historically, state and private schools have operated differently, with state schools serving a diverse student population and private schools catering to more affluent students (Scheper, 2013).

While private schools are often perceived as providing higher-quality education due to better facilities and resources, public schools receive government funding and must adhere to state-mandated curricular standards (Kishan, 2021). However, disparities in ICT infrastructure and resources exist between public and private schools, impacting teacher performance and student learning experiences (Ahmad & Sheikh, 2022; Malero et al., 2015).

Study suggests that private schools outperform public schools in ICT integration due to better resources and support (Gumisirizah et al., 2023). However, efforts to improve ICT implementation in public schools are underway, albeit slower than in private schools (Ali, 2016; Asaolu & Fashanu, 2012; Mu'alimah et al., 2020). Despite differences, public and private schools play crucial roles in shaping students' educational experiences. They must strive for continuous improvement to meet the diverse needs of students, parents, and teachers.

### 3. METHODOLOGY

This mixed method study delves into English Language Teaching (ELT) employing a comprehensive research questionnaire to gauge the mastery of TPACK among EFL teachers. A total of 285 EFL teachers from across Indonesia attending PPG in Yogyakarta were involved in this study. Examining TPACK mastery, research identifies seven dimensions, including TK, PK, CK, TCK, PCK, TPK, and TPACK through Likert scale and open-ended questions. Gender (male and female) and school status (public and private) serve as independent variables, enriching the analysis. Administered through an online survey platform (Google Form), the questionnaire utilized a four-option Likert scale and open-ended questions, measuring key facets of TPACK.

The qualitative data analysis employed Interactive Model, which consisted of four steps: data collection, condensation, data display, and conclusion drawing (Miles et al., 2014).

Meanwhile, the quantitative data was analyzed using descriptive and inferential analysis. Descriptive statistics unveil TPACK mastery through mean, minimum, maximum, standard deviation, and percentage scores. Inferential analysis, employing Multivariate Analysis of Variance (MANOVA), explores variations in TPACK mastery based on gender and school status. MANOVA further dissects TPACK differences by gender within school status, aligning with Arikunto's criteria for categorizing TPACK levels among English teachers.

The validity of the questionnaire for data collection is assessed using the validity test. The validity test was conducted using the SPSS version 22.0 tool and the bivariate person correlation algorithm. The findings confirm each item's validity and statistical significance by showing that they all satisfied this requirement. At a significant level of 5%, the Validity Test computation results, all prices  $r_{count} > r_{table}$ . As a result, every item in this study questionnaire is legitimate and suitable for use as a study tool. Using Cronbach's Alpha, the reliability analysis resulted in an exceptionally high coefficient of 0.974 for the 45-item TPACK questionnaire. This indicates strong internal consistency and reliability, affirming the questionnaire's dependable measurement of TPACK.

#### **4. FINDINGS**

This study aims to evaluate TPACK competency according to school status and gender and unveil the challenges that EFL teachers faced in teaching. 285 EFL teachers from across Indonesia participated in this survey as responders. The gender distribution indicates 73.33% female and 26.66% male respondents. Educational background reveals a predominant possession of bachelor's degrees (95.09%) versus master's degrees (4.91%).

Educational attainment is diversified, with the highest percentage at Junior High School (57.89%), followed by Vocational High School (16.14%), Senior High School (13.68%), and Elementary School (12.28%). Regarding school status, 72.98% are affiliated with state schools, while 27.02% work in private institutions.

Years of teaching experience exhibit diversity, with 30.53% falling within 11-15 years and 31.58% having over 16 years. The 6-10 years category represents 28.07%, while 1-5 years has the lowest percentage at 9.82%. This distribution portrays varied teaching experiences among the educators. In conclusion, the information shows a varied and representative sample with respect to years of teaching experience, gender, educational background, and school status.

During data analysis, specific tests were used to evaluate the data distribution's homogeneity and normalcy. The findings, which take into account variables like gender and educational status,



are shown in Table 3 and show the significant values attained for several components within the Technological Pedagogical Content Knowledge (TPACK) framework. A crucial significance criterion of 0.05 was established.

Table 3: Tests of Distribution Normality

Components	Normality Test for Gender Factor		Normality Test for School Factor		Homogeneity Test	
	Female	Male	State	Private	Gender Factor	School Status
Technological Knowledge (TK)	0.000	0.026	0.000	0.000	0.911	0.045
Pedagogy Knowledge (PK)	0.000	0.000	0.000	0.000	0.477	0.184
Content Knowledge (CK)	0.000	0.000	0.000	0.000	0.063	0.892
Technological Content Knowledge (TCK)	0.000	0.000	0.000	0.000	0.761	0.780
Pedagogical Content Knowledge (PCK)	0.000	0.000	0.000	0.000	0.613	0.012
Technological Pedagogical Knowledge (TPK)	0.000	0.000	0.000	0.000	0.882	0.204
Technological Pedagogical Content Knowledge (TPACK)	0.000	0.000	0.000	0.000	0.770	0.375

For all TPACK components, including TK, PK, CK, TCK, PCK, TPK, and TPACK, the normality tests yielded p-values below 0.05 for both gender and school factors. This denotes a deviation from normal distribution across all TPACK components within the specified gender and school categories.

Furthermore, the homogeneity tests for gender and school factors displayed p-values exceeding 0.05 for all TPACK components. This signifies the absence of significant differences in variances across the considered groups, supporting the assumption of homogeneity.

Consequently, based on these results, it is judicious to infer that the data did not adhere to normal distribution for any of the TPACK components within the specified gender and school factors. Nevertheless, the observed homogeneity in variances across groups facilitates the utilization



of a parametric approach in subsequent analyses, ensuring robust statistical inferences. This meticulous consideration of distributional properties enhances the validity and appropriateness of the selected statistical methodology in alignment with the study objectives.

**Table 4: The Level of TPACK Mastery of EFL Teachers based on Teachers' Gender**

<b>Components</b>		<b>N</b>	<b>Minimum Score</b>	<b>Maximum Score</b>	<b>Standard Deviation</b>	<b>Mean</b>	<b>Criteria</b>	<b>Sig.</b>
TK	Female	209	50.00	100.00	10.97105	83.4591	Good	.858
	Male	76	32.14	100.00	11.38458	82.8483	Good	.588
PK	Female	209	50.00	100.00	10.52356	82.0405	Good	.789
	Male	76	25.00	100.00	12.54101	80.9682	Good	.849
CK	Female	209	50.00	100.00	10.78907	76.8458	Good	.920
	Male	76	35.71	100.00	13.11275	76.7861	Good	.309
TCK	Female	209	50.00	100.00	11.83968	79.1869	Good	.794
	Male	76	25.00	100.00	13.10268	78.2896	Good	.858
PCK	Female	209	53.57	100.00	10.55000	77.6832	Good	.588
	Male	76	28.57	100.00	12.01188	77.4438	Good	.789
TPK	Female	209	50.00	100.00	11.61591	80.2153	Good	.849
	Male	76	25.00	100.00	12.88954	78.4211	Good	.920
TPACK	Female	209	50.00	100.00	11.93978	78.2057	Good	.309
	Male	76	30.00	100.00	12.91996	78.3553	Good	.794

Table 4 comprehensively examines the TPACK mastery levels among EFL teachers, distinguished by gender. The various components encompass TK, PK, CK, TCK, PCK, TPK, and overall TPACK. A comparative analysis between female and male teachers' scores, considering both means and range (minimum and maximum scores) within each component, is presented to provide a nuanced perspective.

In the TK component, female and male teachers exhibit commendable mastery, with mean scores of 83.4591 and 82.8483, respectively, aligning with the "Good" criteria. Similarly, both genders demonstrate substantial competence in the PK component, with mean scores of 82.0405 for females and 80.9682 for males, both meeting the "Good" criteria.

The CK component showcases commendable proficiency, with mean scores of 76.8458 for females and 76.7861 for males, still within the "Good" range. The minimum and maximum scores analysis reveal that female and male teachers share comparable extremes, indicating a parallel distribution of content knowledge proficiency across genders.

Both genders exhibit substantial mastery for TCK, with mean scores of 79.1869 for females and 78.2896 for males. The range of scores reflects slight differences in both minimum and maximum values, suggesting nuanced variations in technological content knowledge attainment between female and male teachers.

PCK proficiency is noteworthy for both genders, with mean scores of 77.6832 for females and 77.4438 for males. The analysis of minimum and maximum scores indicates a similar trend, with both groups demonstrating comparable extremities in pedagogical content knowledge.

In TPK and overall TPACK, both genders demonstrate commendable mastery levels, with mean scores consistently meeting the "Good" criteria. While the analysis of minimum and maximum scores indicates subtle differences, the overall pattern suggests a generally equitable level of TPACK mastery between female and male teachers across various components. The inclusion of range data provides additional insights into the potential variability and distribution of knowledge proficiency within each gender group.

**Tabel 5: The Level of TPACK Mastery of EFL Teachers based on School Status**

Components		N	Minimum Score	Maximum Score	Standard Deviation	Mean	Criteria	Sig.
TK	State	208	32.14	100.00	11.33690	81.7654	Good	.000
	Private	77	64.29	100.00	9.15387	87.4314	Good	.263
PK	State	208	25.00	100.00	11.57561	81.2674	Good	.046
	Private	77	64.29	100.00	9.58015	83.0705	Good	.020
CK	State	208	35.71	100.00	11.55375	76.0133	Good	.694
	Private	77	57.14	100.00	10.85940	79.0357	Good	.574
TCK	State	208	25.00	100.00	12.39598	77.9021	Good	.263
	Private	77	53.57	100.00	11.13824	81.7721	Good	.000
PCK	State	208	28.57	100.00	11.66592	77.4557	Good	.263
	Private	77	60.71	100.00	8.72346	78.0613	Good	.046
TPK	State	208	25.00	100.00	12.49749	79.4231	Good	.020
	Private	77	65.00	100.00	10.44957	80.5844	Good	.694
TPACK	State	208	30.00	100.00	12.51771	77.7644	Good	.574
	Private	77	50.00	100.00	11.21506	79.5455	Good	.263

Table 5 presents a detailed analysis of the TPACK mastery levels among EFL teachers, delineated by school status. The components under scrutiny encompass TK, PK, CK, TCK, PCK, TPK, and overall TPACK. A comprehensive examination of the data, considering minimum and maximum scores, standard deviation, mean values, and criteria categorization, provides nuanced insights into the proficiency of EFL teachers across various knowledge domains.

For TK, teachers in state schools exhibit a mean score of 81.7654, denoting a "Good" level of mastery. In comparison, their counterparts in private schools show a higher mean score of 87.4314, also falling within the "Good" criteria. Notably, the maximum score among private school

teachers is higher, indicating a potential for enhanced technological knowledge attainment in this group.

In the PK component, state and private school teachers exhibit "Good" mastery levels with mean scores of 81.2674 and 83.0705, respectively. The distribution of scores reveals a comparable range, yet private school teachers again showcase a higher maximum score, suggesting a potential variability in pedagogical knowledge attainment within this group.

For CK, state school teachers demonstrate a mean score of 76.0133, while private school teachers exhibit a slightly higher mean of 79.0357, within the "Good" range. The standard deviation values indicate a moderate level of variability in both groups, and the higher maximum score among private school teachers suggests a potential for more excellent content knowledge proficiency within this cohort.

In the TCK component, state and private school teachers achieve mean scores within the "Good" criteria (77.9021 and 81.7721, respectively). The standard deviation values indicate moderate variability, and the higher maximum score among private school teachers implies a potential for enhanced technological content knowledge within this group.

PCK proficiency is evident in state and private school teachers, with mean scores of 77.4557 and 78.0613, respectively, within the "Good" criteria. The standard deviation values indicate moderate variability in both groups and the higher maximum score among private school teachers suggests potential variability in pedagogical content knowledge attainment within this cohort.

In the TPK and overall TPACK components, both state and private school teachers demonstrate "Good" mastery levels. The standard deviation values indicate moderate variability in both groups. The higher maximum scores among private school teachers suggest potential variability in technological pedagogical knowledge and overall TPACK proficiency within this group.

The detailed analysis of TPACK mastery levels among EFL teachers based on school status underscores the nuanced variations in proficiency across different components. While state and private school teachers generally exhibit "Good" levels of mastery, subtle differences in mean and maximum scores suggest potential variations in knowledge attainment within specific domains. These insights are valuable for tailoring professional development initiatives to address specific areas of expertise and enhancing overall TPACK competence among EFL teachers based on their school context.

Table 6: MANOVA results

		Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Noncent. Parameter	Observed Power <sup>h</sup>
Gender	TK	3.761	1	3.761	.032	.858	.032	.054
	PK	36.181	1	36.181	.294	.588	.294	.084
	CK	9.268	1	9.268	.071	.789	.071	.058
	TCK	5.301	1	5.301	.036	.849	.036	.054
	PCK	1.227	1	1.227	.010	.920	.010	.051
	TPK	149.092	1	149.092	1.039	.309	1.039	.174
	TPACK	10.172	1	10.172	.068	.794	.068	.058
School Status	TK	1787.103	1	1787.103	15.286	.000	15.286	.974
	PK	154.796	1	154.796	1.259	.263	1.259	.201
	CK	522.434	1	522.434	4.027	.046	4.027	.516
	TCK	802.078	1	802.078	5.486	.020	5.486	.646
	PCK	18.643	1	18.643	.155	.694	.155	.068
	TPK	45.459	1	45.459	.317	.574	.317	.087
	TPACK	187.185	1	187.185	1.257	.263	1.257	.201

a. Computed using alpha = 0.05

The data in Table 6 provide insights into the effects of gender and school status on various dependent variables in the study. Each row represents the impact of one independent variable (gender or school status) on different aspects of teaching knowledge (TK, PK, CK, TCK, PCK, TPK, and TPACK).

For the variable "Gender," the significance level (Sig.) indicates the strength of the relationship between gender and each dependent variable. A Sig. value less than 0.05 suggests a statistically significant effect. In this case, none of the variables show significance for gender, as all Sig. values are more significant than 0.05. This indicates that gender does not significantly impact the teaching knowledge variables examined in the study.

Significant impacts are noted for several dependent variables regarding the variable "School Status," respectively. Examples of Type III Sum of Squares with Sig. values less than 0.05 are TK (Type III Sum of Squares = 1787.103, df = 1, Mean Square = 1787.103), PK (Type III Sum of Squares = 154.796, df = 1, Mean Square = 154.796), CK (Type III Sum of Squares = 522.434, df = 1, Mean Square = 522.434), and TCK (Type III Sum of Squares = 802.078, df = 1, Mean Square = 802.078). This suggests that these variables are statistically significantly impacted by school status.

In summary, the data suggest that while gender does not significantly affect teaching knowledge variables. On the other hand, school status significantly impacts certain aspects of

teaching knowledge, such as TK, PK, CK, and TCK. These findings highlight the importance of considering school context when examining factors influencing teaching knowledge among participants.

#### ***4.1 Challenges and Opportunities***

The difficulties and opportunities faced by EFL teachers in using TPACK were discussed, and they concluded that ICT could boost student engagement by encouraging reticent students to participate in class activities. Better interactions between students and teachers as well as between students and peers were made possible by ICT during the learning process. The ICT tools, according to the EFL teachers, also assisted students in planning and organizing their ideas before engaging in face-to-face discussions during learning sessions. Some challenges that EFL teachers faced are summarized in the following points.

1. **Complexity of Instructional Design:** Creating educational resources that successfully integrate technology and support learning goals presents difficulties for teachers. This complexity involves the laborious process of finding relevant resources, creating products that are appropriate for the digital world, and making sure that they are in line with curriculum requirements.
2. **Infrastructure and Assistance Restrictions:** The smooth integration of technology into teaching practices might be impeded by inadequate assistance from stakeholders, including as administrators and IT departments. The efficiency of technology-enhanced learning experiences is impacted by problems including inadequate hardware/software resources and a lack of technical support.
3. **Technical problems and interruptions:** Technical problems or interruptions resulting from unstable internet connectivity disturb the way that lessons are taught and make it harder for students to participate. Furthermore, technical difficulties such hardware malfunctions or software compatibility problems can reduce the efficacy of technology-enhanced teaching strategies.
4. **Plagiarism and Academic Integrity:** Students are more likely to commit plagiarism as a result of the ease of access to digital resources and internet content. In order to overcome this obstacle, educators must put in place measures that both encourage and prohibit unethical behavior, such as appropriate citation guidelines and real assessment techniques.

In addition to identifying challenges encountered by EFL teachers, this study also unveils opportunities for enhancing learning conditions and address these challenges. The ensuing points outline strategies EFL teachers can employ to mitigate these challenges and foster improvement.

1. **Enhanced Student Motivation and Engagement:** The omnipresence of technology in students' lives has reshaped their learning preferences, fostering a natural inclination towards technology-driven educational experiences. Integrating technology into the classroom capitalizes on this affinity, enhancing motivation and engagement. EFL teachers' observation highlights the positive impact of technology on student satisfaction and academic outcomes.
2. **Improvement of Professional growth and Skill:** The integration of technology, particularly through the TPACK framework, enhances teachers' professional growth by fostering a culture of lifelong learning and innovation. This continuous adaptation improves educators' proficiency in leveraging technology for effective pedagogy and optimizes student learning outcomes. EFL teachers experience highlights the transformative potential of technology integration in creating dynamic and engaging learning environments for both teachers and students.
3. **Creation of a Pleasant and Flexible Learning Environment:** Utilizing technology in the classroom creates a versatile learning environment conducive to various learning styles and preferences. EFL professors allowing students to use devices with agreements illustrates this adaptability. By integrating technology, educators cultivate active engagement, teamwork, and inquiry, facilitating deeper learning experiences.
4. **Opportunities for Multimodal Learning Products:** Technology facilitates the creation of multimodal learning products integrating text, audio, video, and graphics, enhancing comprehension and retention across diverse learning preferences. EFL teachers promote students' creativity, critical thinking, and language skills by assigning tasks requiring technology for developing multimodal materials. By embracing technology-mediated multimodal learning, educators can provide students with avenues for self-expression, collaboration, and authentic skill development, preparing them for success in the digital age.

## 5. DISCUSSION

The discussion delves into the multifaceted integration of TPACK dimensions within EFL teaching contexts, aligning with the insights from the literature review. Gender emerges as a significant variable influencing technological consciousness and ICT integration (Cheng & Xie, 2018; Ekrem & Recep, 2014; Lin et al., 2013; Purwati, 2022; Wang, 2022). However, our study did not reveal statistically significant differences in TPACK mastery between male

and female EFL teachers, suggesting equitable proficiency levels across genders, consistent with the previous study. Conversely, disparities in school status significantly impact TPACK mastery, particularly between state and private institutions (Voithofer et al., 2019; Wang, 2022). State schoolteachers demonstrated higher TPACK proficiency levels, emphasizing the influence of school context on technological, pedagogical, and content knowledge integration, which aligns with findings from previous studies.

In summary, our study contributes nuanced insights into the discourse on effective technology integration in ELT, aligning with prior study while shedding light on gender and school status-specific variations in TPACK proficiency among EFL teachers. These findings underscore the importance of tailored professional development initiatives to enhance TPACK proficiency, particularly in addressing gender-based disparities and bridging the gap between state and private institutions in educational contexts.

Moreover, the findings emphasize the need for collaborative efforts among policymakers, educators, and educational stakeholders to address the challenges hindering effective technology integration in ELT, ultimately fostering innovative and transformative pedagogical practices conducive to 21st-century learning environments.

According to the findings, EFL teachers encountered significant hurdles in designing instructional materials suitable for digital platforms. This challenge often resulted in EFL teachers spending extensive time developing content aligned with the technological tools available (Sarıçoban et al., 2019). Additionally, sourcing appropriate materials posed a challenge, as EFL teachers struggled to find resources that effectively complemented their teaching objectives (Asaolu & Fashanu, 2012). Furthermore, the lack of support from stakeholders in terms of software and hardware added to the difficulties EFL teachers face in implementing ICT effectively (Lye, 2013; Phakiti et al., 2018)

Another significant challenge identified was the interruptions caused by internet speed and instances of plagiarism among students. Slow internet connectivity hindered the smooth execution of online activities, disrupting the flow of teaching and learning processes (Lindqvist & Pettersson, 2019). Moreover, plagiarism, characterized by students copying and pasting their peers' discussion answers or sources from the internet, undermined the integrity of collaborative learning environments (Istamia, 2019; Lye, 2013). These challenges highlight the complexities of ICT integration in educational contexts and underscore the need for comprehensive solutions to address them effectively.



Based on the insights and recommendations, EFL teachers emphasized the importance of meticulous preparation to ensure that technological tools enhance students' understanding of the material. Educators need to critically evaluate technology's suitability for specific teaching content and methods, emphasizing the importance of aligning technological tools with pedagogical objectives.

Conversely, the Technological Pedagogical Content Knowledge (TPACK) framework offers many opportunities to enhance teaching and learning practices through technology integration. Respondents recognized the motivational impact of technology on teachers and students, particularly in catering to the preferences of modern learners. EFL teachers' acknowledgment of students' reliance on technology underscores the importance of adapting teaching methods to meet their needs. By leveraging technology, educators can create dynamic and interactive learning environments that foster student engagement and cooperation.

Moreover, technology facilitates the development of multimodal learning experiences, allowing students to produce diverse forms of content such as text, audio, video, and images. EFL teachers' approach to task-based activities highlights the transformative potential of technology in promoting collaboration and skill development among students. Through these initiatives, technology enhances learning outcomes and encourages teachers to improve their pedagogical practices and embrace innovative teaching methods continuously.

## **6. CONCLUSION**

The study offers a pioneering examination of the Technological Pedagogical Content Knowledge (TPACK) framework's application among EFL teachers in Indonesia, with a focus on the challenges and opportunities presented by ICT integration in English Language Teaching (ELT). This study illuminates the proficiency levels of TPACK among a diverse group of 285 EFL teachers participating in the Teacher Professional Education Program (PPG) in Yogyakarta, Indonesia. By delving into how educators integrate technology with pedagogy and content knowledge, it marks a significant advancement in educational technology study, specifically in the context of ELT.

The demographic and professional diversity of the surveyed teachers underscores the need for targeted interventions to enhance TPACK competence across different educational settings. The study findings contribute to the discourse on technology-enhanced learning by revealing that while gender does not significantly influence TPACK mastery, school status does. State school teachers tend to demonstrate higher levels of TPACK mastery compared to

their counterparts in private schools, highlighting the critical role of school context in the effective integration of technology, pedagogy, and content knowledge.

Moreover, the study identifies specific barriers to ICT integration, including instructional design complexity, resource constraints, and technological disruptions, while also showcasing the TPACK framework as a valuable tool for addressing these challenges. Tailored professional development initiatives, informed by the study findings, are essential for equipping educators with the necessary skills and knowledge to leverage technology effectively in their teaching practices.

In addition, the study emphasizes the importance of creating engaging and interactive learning environments that resonate with the preferences of modern learners. Successful technology integration depends on educators' ability to adapt their pedagogical approaches and content delivery methods to align with available technological tools. By continuing to explore and implement the TPACK framework, educators can enhance their teaching and learning experiences, ultimately unlocking the full potential of technology in education.

This comprehensive analysis reveals critical insights into TPACK proficiency among EFL teachers in Indonesia, underscoring the importance of school context in TPACK integration and the need for nuanced professional development based on school status. As educators navigate the digital shift, the study highlights the promising opportunities offered by the TPACK framework to overcome ICT integration challenges, fostering innovative pedagogical practices conducive to 21st-century learning environments.

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