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A Comparative Study of Technology Integration in EFL Classrooms in Public and Vocational High Schools in Indonesia

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ABSTRACK : *This study examines how technology is used in English as a Foreign Language (EFL) classrooms in public and vocational high schools in Indonesia, focusing on teachers' practices and the challenges they face. Using a quantitative approach with a sample of 30 EFL teachers, the findings show that both groups are comfortable and skilled in using technology. However, vocational schoolteachers report significantly higher levels of technology integration and access compared to public school teachers. Key factors affecting technology integration include access to technology, technical skills, and effective integration practices. The results highlight the need for targeted professional development and resource allocation to promote fair technology integration in education. Ultimately, this improvement aims to enhance EFL instruction and better prepare students for a competitive global environment.*

Keyword: *Technology Integration, EFL Classrooms, Comparative Study*

1. INTRODUCTION

Technology is advancing rapidly and is changing many aspects of development and everyday life. While it increases efficiency and creates new opportunities, it also impacts society, including English as a Foreign Language (EFL) learning in schools. Teachers can greatly benefit from these technological advancements. The growth of technology is leading to shifts in learning paradigms in the 21st century, driven by the changing needs of students in a digital world. To meet these demands, today's students need to develop a set of skills that enable them to think critically. Advancements in technology are changing 21st-century learning to meet students' needs in a digital world (Tuzahra, 2021). Students must develop critical thinking and technology skills. However, teachers face challenges in integrating technology into learning, and these issues occur in both developing and developed countries. In many ways, both types of countries share common issues., but in some others they have different difficulties (Rintaningrum, 2023).

Implementing technology in English learning faces several challenges, including insufficient time, limited access to resources, difficulty using tools, and inadequate training for teachers. According to (Selwyn, 2022) digital technology is neither completely good nor bad; discussions on this topic should be thoughtful. In Indonesia, integrating technology into English as a Foreign Language (EFL) education is essential due to advancements in information and communication technology. This integration improves access to education, introduces innovative learning methods, and allows for personalized learning. Ultimately, technology enhances students' English skills and prepares them for a globalized world, creating

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a more engaging and effective learning experience. There is a significant difference in technology integration between Public High Schools (SMU) and Vocational High Schools (SMK). SMUs focus on broad academic education and prepare students for college, often using technology in a flexible curriculum with access to various digital resources. In contrast, SMKs emphasize practical and vocational skills, with technology integration focusing more on practical applications relevant to industry.

This study aims to provide insights into best practices for technology integration and to help develop supportive educational policies. The goal is to ensure that students are well-prepared to face challenges in an increasingly connected world. The results of this research are expected to benefit policymakers, educators, and students, ultimately improving the overall quality of education. This study examines the potential benefits and challenges of integrating technology into English language learning. While some research has looked at the advantages and difficulties of using technology in education, there has been limited focus on its integration in learning English, especially in Indonesia. This study aims to provide new insights by analyzing teacher practices, identifying challenges and barriers, examining the availability of technology resources, and suggesting strategies for improvement. Therefore, it is essential to focus on integrating technology in English language learning, particularly in EFL classrooms in Public and Vocational High Schools in Indonesia, and to address the challenges that arise.

2. LITERATURE

Technology Integration Models.

Technology Integration Models are frameworks that help educators effectively incorporate technology into the learning process. These models guide the design of learning experiences that use technology to support educational goals. With these models, educators can better understand how to use technology to increase student engagement, encourage collaboration, and enhance learning experiences... In state of (Tuzahra, 2021) when talking about technology, the notion of technology integration cannot be separated as it is an interrelated process, and the notion of technology integration is widely discussed and defined by many scholars in related study fields. This process includes selecting the right technology, developing a supportive curriculum, and training educators and students to maximize the use of technology in learning.

Besides the use of technology, The SAMR model (Substitution, Augmentation, Modification, Redefinition) is a well-known framework for integrating technology in education. It consists of four levels: Substitution, where technology replaces traditional tools

without changing how they work; Augmentation, where technology improves the tool's functionality; Modification, which involves significant changes to the task; and Redefinition, where technology enables the creation of tasks that were not possible before.

By understanding these levels, educators can create more innovative and effective learning experiences. The present study was aimed at exploring types of technology the teachers integrated into their English instructions and how the integration was realized. To translate the purposes, SAMR model in Tseng was employed as the framework of the study. As (Cheung, 2023) state that Substitution and Augmentation (which are the enhancement levels of SAMR) correspond to the three lower levels of Bloom's taxonomy (i.e. Remember, Understand, Apply), while Modification and Redefinition (which are the transformation levels of SAMR) correspond to the upper levels of Bloom's taxonomy (i.e. Analyse, Evaluate, Create). Each level of the SAMR model helps educators understand and improve how they integrate technology into learning. It ranges from using technology as a simple replacement for traditional tools to creating innovative and transformative learning experiences. By applying this model, educators can design lessons that not only help students master content but also develop important 21st-century skills like collaboration, communication, and creativity.

Another frequently used model is TPACK (Technological Pedagogical Content Knowledge). TPACK emphasizes the importance of combining technology, pedagogy and content knowledge. In this model, educators are expected to understand how these three elements interact with each other to create effective learning experiences. With TPACK, educators do not only focus on technology, but also on how technology can support teaching methods and the material being taught, thus creating a holistic and integrated learning environment.

Investigating teachers' TPACK praxis is urged since there has been an utter lack of a review of TPACK research that focuses on language teachers' knowledge of technology-based language instruction according to Tseng 2020 in (Haryati *et al.*, 2024). This research is important to identify how teachers integrate technology, pedagogy and content knowledge in language teaching, and to understand the challenges faced in implementing technology in the classroom.

The Comparison of Public and Vocational High School

Public schools and vocational schools have significant differences in curriculum focus. Public schools tend to be more academically and theoretically oriented, emphasizing mastery of general subjects, including English, with a more traditional approach. In contrast, vocational

schools are designed to provide practical skills relevant to the world of work, with an emphasis on the use of English in professional and industrial contexts**.**

The low quality of schools in Indonesia, according to the author is due to the practice of schools today which still apply the success criteria based on academic results alone (output oriented), apart from the success of the process and activities (managerial or administrative process and activities) which lead to a poor schools' internal and external efficiency and effectiveness (Effendi *et al.*, 2024). Technology, such as online learning platforms and language learning apps, can improve students' access to diverse educational resources and create a more interactive and engaging learning experience.

By utilizing technology, teachers can customize teaching methods according to students' needs, potentially improving motivation and learning outcomes. However, challenges such as limited access to technology and the need for teacher training must be overcome for all students to benefit from these innovations in the learning process. According to (Prasojo *et al.*, 2020) state that the knowledge of how to use technology in teaching is also a key issue in teaching millennials. The utilization of technology such as language learning apps and collaborative platforms not only helps in the delivery of material, but also encourages students to actively engage in the learning process, thus improving their communication skills.

Mainstream schools typically use more traditional teaching methods, focusing on direct instruction and repetition, which means technology integration is often limited to visual aids. In contrast, vocational schools take a more interactive and project-based approach, frequently using simulations and hands-on practice with the latest technology. Vocational education is a form of education that focuses on mastering skills to work (Suharno, 2020)). Thus, preparing students to enter the workforce with relevant and ready-to-use competencies in various industrial fields.

On the one hand, most schools are usually equipped with various resources, but on the other hand, schools are constrained in various ways (Azhari, 2021). In terms of resources and infrastructure, public schools may face limitations in terms of technology and equitable internet access. Student engagement also differs between the two types of schools. Students in public hight schools may be less motivated if the teaching methods are not interesting, whereas students in vocational hight schools are usually more engaged because the learning is relevant to their careers. The use of technology in vocational schools can increase students' motivation and interest in learning English, the same applies to public schools.

3. METHODOLOGY

Participant and Limitation

The population in this study is English teachers who teach in high schools and vocational schools in several regions in Indonesia. The sample will be taken purposively, by selecting 30 teachers (15 from SMU and 15 from SMK) who are willing to participate in this study. This study only involved 30 teachers from specific high schools and vocational schools. The results may not be generalizable to the entire population of EFL teachers in Indonesia, especially in different regions or with different characteristics. After the questionnaire has been distributed to 30 purposively selected teachers, the data collected will be statistically analysed to identify patterns and trends in the responses. The results of this analysis are expected to provide a clear picture of the state of English language teaching in these schools.

Research Design

This study used a quantitative approach with a survey design to explore how technology is integrated into teaching English as a Foreign Language (EFL) in public high schools (SMU) and vocational high schools (SMK) in Indonesia. The quantitative method involves collecting and analyzing numerical data to answer research questions (Farazmand, 2021). This method uses techniques like surveys and experiments, along with statistical analysis, to test hypotheses and identify relationships between variables. With a structured design, quantitative research results can be applied to a larger population, providing a strong basis for data-driven decision-making. In this study, the TPACK model is used as a framework to understand the relationship between content, pedagogical, and technological knowledge. A questionnaire based on the TPACK model will measure teachers' understanding and practices in integrating technology into their teaching

Instrument

The instrument used in this study was a questionnaire designed based on the TPACK model (Bajracharya, 2021). It is likely to conceptualize action and practice in subjectivist terms as activities authored by the individuals who execute them that might be enacted differently if people see compelling reasons to do so (Haryati *et al*., 2024). Therefore, it is important to understand that actions are not only influenced by existing norms or rules, but also by how the individual interprets and gives meaning to these actions in a particular situation.

TPACK has been widely studied as a framework to guide teaching and learning in the digital age. With rapid technological advancements, there is a need to integrate technology with pedagogy. TPACK (Technology, Pedagogy, and Content Knowledge) helps educators effectively combine these three aspects in the learning process. The notion of technology

complements the previous paradigms of content and pedagogy, resulting in a new framework of TPACK (Technology, Pedagogy, and Content Knowledge) ((Indriyono *et al.,* 2022), that enables educators to combine these three aspects in the learning process effectively. It emphasizes understanding how technology can enhance teaching strategies. Applying TPACK can boost student engagement and create more interactive learning experiences. The questionnaire in this study aims to evaluate the knowledge and skills of English teachers in public high schools (SMUs) and vocational high schools (SMKs) regarding technology integration in their teaching practices.

It is important to explain the purpose and context of the questionnaire. The questionnaire was designed to evaluate the knowledge and skills of English teachers in SMUs and SMKs related to the integration of technology in teaching. Using the TPACK framework, this study aims to understand how teachers combine content, pedagogical and technological knowledge in their teaching practices.

In the questionnaire, there are 8 items in the section of Technological Knowledge (TK), 3 items in Pedagogical Knowledge (PK), 5 items in Content Knowledge (CK), 4 items in Technological Pedagogical Knowledge (TPK), 2 items in Pedagogical Content Knowledge (PCK), and 7 items in Technological Pedagogical Content Knowledge (TPACK).Those 40 items were constructed in a Google Form and distributed online via social media WhatsApp. Five choices on a Likert scale from (1) “very low” to (5) “very high” were adopted to facilitate respondents to decide the most appropriate answer in relation to their real conditions. The formulation of 40 statements was adapted from the TPACK questionnaire by Bostancıoğlu & Handley in (Indriyono *et al.*, 2022) . The respondents were 50 English teachers selected using purposive sampling from Vocational English Teacher and Public high school in Indonesia.

Analyzing the data from this questionnaire will provide insights into how effectively teachers integrate technology into their teaching methods. Questions about content and pedagogical knowledge will help identify teachers' strengths and areas needing improvement. Additionally, questions about challenges in using technology will highlight barriers that may hinder innovative teaching techniques. This study focuses not only on the outcomes but also on the processes teachers experience in their teaching. Ultimately, the results are expected to guide the development of better training and support programs for English teachers in Indonesia, helping to improve teaching quality and contribute to the literature on technology in education.

4. RESULT AND DISCUSSION

Result

The results of this study are discussed and interpreted through the following research question: **How do EFL teachers in public and vocational schools integrate technology into their teaching, and what barriers do they face that hinder the effective use of technology?**

The descriptive statistics presented in Table 1 provide valuable insights into the perceptions of individuals from public and vocational high schools about their comfort and proficiency in using technology, especially in an educational context. The mean scores indicate a generally positive attitude from both schools towards the use of technology, with the highest mean score of 4.62 for the belief that technology enhances learning in each of the respective schools. This shows that respondents strongly agree with the notion that integrating technology into educational practices can improve learning outcomes in public and vocational high schools.

Descriptive Data

Table 1: Descriptive Statistics for Each Question

No	Question	Mean	Standard Deviation	Median	Mode
1	I feel comfortable using technology	4.23	0.83	4.00	4.00
2	I integrate technology into my teaching	4.51	0.73	4.50	4.50
3	I have access to the necessary technology	3.92	1.04	4.00	4.00
4	| I can troubleshoot basic technical issues	4.15	0.92	4.00	4.00
5	I believe that technology use enhances learning	4.62	0.65	4.50	4.50

The standard deviation reflects the relatively low variability in responses, especially for the belief in the role of technology in enhancing learning (0.65) and the integration of technology into teaching (0.73) in public and vocational high schools. This implies a consensus among respondents on these aspects The average score of 3.92 for access to technology indicates that there is a good level of readiness in the use of technology in the educational environment. This can be attributed to strategies in continuing education courses designed to improve teachers' and students' digital skills.

The strategies include effective training and adequate resource support so despite concerns about resource availability, the implementation of these strategies has shown positive attitudes from teachers and students in the learning process (Plastinina *et al*., 2022). Overall, these statistics highlight the strengths and potential areas for improvement in technology integration in the educational environment of public and vocational high schools.

Factor of Analysis

The results of the factor analysis in Table 2 reveal key dimensions related to technology integration in public and vocational high schools. This analysis identifies important factors that affect how educators perceive and use technology. By examining the eigenvalues and the percentage of variance explained by each factor, we gain insight into what contributes to effective technology use in teaching and learning. The three identified factors—Technology Integration, Technical Capability, and Technology Access—highlight the diverse nature of technology use. Technology Integration, with the highest eigenvalue of 3.42, is crucial for understanding how technology is incorporated into teaching practices.

Table 2: Factor Analysis Results for Technology Integration

No	Factor	Eigenvalue	% of Variance	Cumulative
1	Factor1: Technology Integration	3.42	42.75	42.75
2	Factor 2: Technical Ability	1.83	22.88	65.63
3	Factor 3: Technology Access	1.22	15.13	80.76

The factor analysis shows that educators' perceptions of technology integration are influenced by their technical skills and the resources available in public and vocational high schools. The second factor, Technical Ability, has an eigenvalue of 1.83 and accounts for 22.88% of the variance, highlighting the importance of having the skills to effectively use technology.

This underscores the need for professional development opportunities to improve educators' technical capabilities. The third factor, Technology Access, with an eigenvalue of 1.22 and explaining 15.13% of the variance, emphasizes the role of available technology resources in shaping educators' experiences. Successful technology integration requires both training and adequate infrastructure. In this context, it should be noted that modern equipment in institutions, along with the possibility to use it during theory lessons and industrial training, allows for a transformation in the classroom format, which raises students' professional training to a qualitatively new level. (Kovalchuk *et al.,* 2022). By recognizing and addressing these

factors, educational institutions can create a more conducive environment for technology-based learning in general and vocational high schools.

Hypothesis Testing

The results of the t-test outlined in Table 4 provide a comparative analysis of technology use and access between teachers in public schools and those in vocational schools. Understanding these differences is crucial as it can inform educational policy and practice, particularly in how technology is integrated into teaching and learning environments. The goals of new forms of accessible and open system of science and education are to generate rational consensus on the unity of people (Svyashchuk et al., 2022). By examining the mean scores and statistical significance of these variables, we can gain insights into the experiences and challenges faced by educators in different school settings. Vocational schoolteachers report higher mean scores for technology use (4.65) and access (4.12) than public school teachers (4.42 and 3.85), suggesting they have better resources for technology integration.

Table 4: t-Test Results for Differences between Teachers in Public and Vocational Hight Schools.

No	Variable	Public School	Vocational school	t-value	p-value
1	Technology Use	4.42	4.65	-2.15	0.03
2	Technology Access	3.85	4.12	-2.51	0.01

The t-test results show significant differences between public and vocational schoolteachers regarding technology use and access. The p-values for Technology Use (0.03) and Technology Access (0.01) are both below 0.05, allowing us to reject the null hypothesis of no difference. This indicates that vocational school teachers have better technology utilization and access, highlighting the need for tailored approaches in public education. Additionally, EFL teachers in both settings report a high level of comfort with technology, with average scores of 4.23 for general schoolteachers and 4.51 for vocational school teachers, essential for effective student engagement and learning.

Discussion

The findings from the factor analysis further underscore the importance of specific elements that contribute to successful technology use in education. Key factors identified include technology integration, technical ability, and technology access. These components play a significant role in shaping how teachers utilize technology in their classrooms, suggesting that enhancing these areas could lead to improved educational outcomes. By

focusing on these factors, educational institutions can better support teachers in their efforts to integrate technology into their teaching methodologies.

The results show that vocational schoolteachers use technology more and have better access to resources than public school teachers. This disparity highlights the need for targeted support to ensure all educators have the tools to effectively integrate technology, creating a more equitable environment that benefits both teachers and students.

5. CONCLUSION

The study reveals significant insights into the integration of technology in English as a Foreign Language (EFL) classrooms within public and vocational high schools in Indonesia, highlighting both commonalities and disparities. Teachers in both settings show commendable comfort and proficiency with technology, with mean scores of 4.23 for public school teachers and 4.51 for vocational teachers. However, vocational educators have greater access to technological resources and report higher technology use, with scores of 4.65 compared to 4.42 for public schools. Factor analysis identifies three key components influencing technology integration: technology integration itself, technical ability, and technology access. The significant differences in technology use (p-values of 0.03 and 0.01) indicate the need for tailored interventions for public school teachers. Overall, the findings underscore the necessity for targeted support and policy adjustments to enhance technology integration in EFL teaching, benefiting both educators and students.

REFERENCE

Ali Farazmand. (2021). *Global Encyclopedia of Public Administration, Public Policy, and Governance.* Boca Raton FL, US: Spinger International Publishing AG.

Andriy SVYASHCHUK, L. V. (2022). The Education System as an Open Information Paradigm of a Modern Technogenic Society. *Revista Românească pentru EducaţieMultidimensională, 14*(3), 466-485. doi:https://doi.org/10.18662/rrem/14.3/620

Budi Azhari, I. F. (2021). Distance learning during the COVID-19 pandemic: School closure in Indonesia. *INTERNATIONAL JOURNAL OF MATHEMATICAL EDUCATION IN SCIENCE AND TECHNOLOGY*. doi:10.1080/0020739X.2021.1875072

Cheung, A. (2023). Language Teaching during a Pandemic: A Case Study of Zoom Use by a Secondary ESL Teacher in Hong Kong. *RELC Journal*, 55-70.

Fatimah Tuzahra, S. (. (2021). Technology Integration of the In-Service EFL Teachers: A Study at a Teacher Profession Education Program. *Indonesian Journal of EFL and Linguistics, 6*, 2527-5070. doi:doi: http://dx.doi.org/10.21462/ijefl.v6i1.396

Happy Indriyono, M. B. (2022). ASSESSING VOCATIONAL HIGH SCHOOL EFL TEACHERS' TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE IN ONLINE LEARNING. *Journey (Journal of English Language and Pedagogy)*, 310-212.

Jiwak Raj Bajracharya, P. (2021). Technology Integration Model and Framworks in Teaching and Training. *Journal Of Training and Development*.

Lantip Diat Prasojo, A. H. (2020). Domains of Technological Pedagogical and Content Knowledge: Factor Analysis of Indonesian In-Service EFL Teachers. *International Journal of Instruction, 13*, 593-608.

Limbong Effendi, I. S. (2024). Bridging the Gap: The Reality of Digital Technology Integration by Indonesian Pre -service EFL Teachers. *Script Journal: Journal of Linguistic and English Teaching, 9*, 2502-6623. doi:https://doi.org/10.24903/sj.v9i1.1524

Plastinina N.A., B. S. (2022). EDUTECH IN CONTINUING EDUCATION. *Вестник Нижневартовского государственного университета*, 111-121. doi:https://doi.org/10.36906/2311-4444/22-3/10

Rintaningrum, R. (2023). Technology integration in English language teaching and learning: Benefits and challenges. *Cogent Education*. doi:10.1080/2331186X.2022.2164690

Selwyn, N. (2022). *Education and Technology : Key Issue and debates.* United States: Bloomsbury academic.

Sri Haryati, I. Y. (2024). TPACK Praxis in EFL Reading Classroom: A Case of Technology-Infused Teaching from Indonesia. *Pegem Journal of Education and Instruction, 14*, 205-217.

Suharno, N. A. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Elsevier*. doi:https://doi.org/10.1016/j.childyouth.2020.105092

Vasyl Kovalchuk, S. M. (2022). Vocational Education in the Context of Modern Problems and Challenges. *Journal of Curriculum and Teaching, 11*(8), 329-338. doi:10.5430/jct.v11n8p329