

A Systematic Literature Review of TPACK Implementation in Indonesian Language Education for the Digital Era

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ABSTRACT

The transformation of education in the digital era requires educators to possess competencies that effectively integrate technology, pedagogy, and learning content. This study aims to formulate practical recommendations for educators and curriculum developers to optimally integrate TPACK into Indonesian language learning by identifying its impact on language skills. The research method employed is a Systematic Literature Review (SLR) of national and international scholarly publications published between 2020 and 2025. Literature searches were conducted through databases such as Google Scholar, and SINTA. Inclusion criteria covered studies discussing the implementation of TPACK in early childhood education, primary schools, and secondary schools within the context of teaching Indonesian language. Based on a total of 12 scholarly publications, the findings reveal that 25% reported the application of TPACK positively impacted receptive language skills (listening and reading), 42% influenced expressive language skills (writing and speaking), and 33% affected non-language skills (learning autonomy, learning motivation, and improved learning outcomes). Overall, the implementation of TPACK aligns with the demands of education in the digital era by helping educators integrate subject content with technology, particularly in language skills. However, there is still a scarcity of scholarly publications examining the effectiveness of this method in Indonesian language instruction. Therefore, in addition to recommending the application of this teaching model, this study is also expected to serve as a reference for future research.

Keywords: TPACK, Indonesian Language Learning, Digital Era, Systematic Literature Review, Digital Literacy

Introduction

The advancement of digital technology has brought significant transformations across multiple domains. The digital era can be defined as a historical period characterized by the rapid development of information technology, communication, the internet, and digital devices, which have fundamentally changed how humans access, manage, and disseminate knowledge. This shift has had a wide-ranging impact on many aspects of life, including education. Within the learning context, the digital era does not merely introduce new tools and media but also reshapes educational paradigms, modes of interaction, and methods of teaching and learning. Education, once primarily teacher-centered, has now become more open, interactive, and technology-driven, requiring both learners and educators to develop adequate digital literacy and competencies.

This transformation has also redefined the role of educators. Teachers are no longer simply providers of information but serve as facilitators, motivators, learning consultants, and ethical guides who help students navigate the flow of digital knowledge. Consequently, teachers are expected to possess strong digital literacy, adaptive pedagogical skills, and moral sensitivity to guide students in using technology responsibly. In other words, the success of digital education is largely determined by teachers' ability to integrate technology, pedagogy, and content effectively.

One conceptual framework that is particularly relevant in addressing these challenges is Technological Pedagogical Content Knowledge (TPACK). TPACK emphasizes the integration of technology, pedagogy, and content. Through this model, teachers are expected to design learning that is more innovative, contextual, and aligned with the needs of the digital generation. TPACK is considered one of the most influential frameworks in research on technology integration in education. Rahmadi (2019) describes TPACK as a 21st-century teacher knowledge framework that balances technology, pedagogy, and content without prioritizing one over the others. The concept was introduced by Mishra, P., & Koehler (2006) as an expansion of Shulman's (1986) Pedagogical Content Knowledge (PCK). While PCK emphasizes mastery of content and pedagogy in teaching, TPACK broadens this perspective by adding the technological dimension, thereby providing a more comprehensive framework for responding to the challenges of education in the digital era.

Fundamentally, TPACK asserts that teachers must master three core domains of knowledge: Content Knowledge (CK), Pedagogical Knowledge (PK), and Technological Knowledge (TK). CK refers to mastery of the subject matter being taught. In the context of Indonesian language education, this includes an understanding of grammar, writing skills, literary appreciation, phonology, semantics, and cultural aspects embedded in the language. PK refers to knowledge of teaching strategies, methods, and approaches suited to students' characteristics, including classroom management, assessment strategies, and an understanding of cognitive and affective development. TK involves the ability to use hardware, software, educational applications, and other digital media to support teaching and learning.

The interaction among these domains produces derivative forms of knowledge: Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), and Technological Pedagogical Knowledge (TPK). Ultimately, these domains and their intersections

converge into the most complex form of knowledge—TPACK itself. The essence of TPACK lies in teachers' ability to appropriately integrate technology into content and pedagogy to create innovative and effective learning tailored to 21st-century learners. Mishra, P., & Koehler (2006) emphasize that TPACK is not merely technical proficiency with technology but rather a holistic professional competence that unites all dimensions of teacher knowledge.

In the context of Indonesian language education, TPACK is highly relevant. Its integration allows teachers to align language learning with evolving technologies. The shift in communication patterns in the digital era demands language learning that is adaptive, innovative, and relevant. Language skills are fundamental to human life, serving as tools of communication, means of thought, and vehicles for constructing and transmitting culture. Generally, language skills are categorized into four main domains—listening, speaking, reading, and writing—that are interrelated and form a holistic unit (Taufina, T., Delvia, R., & Zuleni, 2019). Listening is the most basic receptive skill, enabling individuals to capture, comprehend, and interpret spoken messages. Speaking is a productive skill for expressing ideas, emotions, and information orally in both everyday conversations and formal contexts. Reading is a receptive skill that requires cognitive engagement to interpret, analyze, and evaluate written texts. Writing, in contrast, is a productive skill that demands mastery of vocabulary, grammar, and organizational ability to convey ideas coherently and comprehensibly (Tarigan, 2008).

These four skills are inseparable as they mutually reinforce one another in communication processes (Saddhono, K., & Slamet, 2014). For instance, strong listening skills support better comprehension of others' ideas, which in turn enhances speaking abilities. Likewise, proficient reading supports writing skills, as both involve critical and analytical thinking. Therefore, Indonesian language education cannot focus on a single skill in isolation but must integrate all four to develop holistic communicative competence (Siswanto, D., & Nuraeni, 2018).

Despite its relevance, research on the application of TPACK in Indonesian language education remains limited. Existing studies have largely focused on the integration of TPACK in science, mathematics, or foreign language learning. The lack of systematic and comprehensive reviews addressing the effectiveness of TPACK in Indonesian language teaching presents a research gap. This study thus aims to address this gap by conducting a **Systematic Literature**

Review (SLR) to identify, analyze, and synthesize findings related to the implementation of TPACK in Indonesian language learning as a solution to challenges in the digital era.

Several prior studies have applied SLR methods to examine TPACK in different educational contexts. For example, *A Systematic Review of TPACK Research in Primary Mathematics Education* (Li et al., 2024) explored TPACK use in elementary mathematics learning, finding that TPACK assessment instruments remain dominated by Likert-scale surveys and that mixed-method approaches are underutilized. However, this research was limited to mathematics and did not examine language education. Similarly, *Research Trends in Technological Pedagogical Content Knowledge (TPACK): A Systematic Literature Review from 2010 to 2021* (Astiana, et. all, 2021) analyzed publication trends in TPACK research, revealing a predominance of qualitative approaches and significant contributions from developed countries. Yet, this study did not examine in depth how TPACK can be applied in literacy-based subjects.

Other works, such as *Applying TPACK in STEM Education towards the 21st Century: Systematic Literature Review* (Abdullah & Mahmud, 2024), confirmed that TPACK effectively enhances students' higher-order thinking skills (HOTS) in science learning. However, these findings have not been tested in the humanities, where technology integration requires different approaches, particularly in Indonesian language education. Likewise, *Significant Effect of the TPACK Framework on Teachers' Self-Efficacy: A Systematic Literature Review* (Rahman et al., 2022) highlighted the role of TPACK in improving teachers' self-efficacy but did not address strategies for optimizing TPACK in facing digital-era challenges. These studies demonstrate the need for further exploration of TPACK in language learning contexts that must adapt to technological developments.

Furthermore, *Systematic Literature Review of TPACK Scale Development in Science Learning (2006–2022)* (Rukmana, 2023) identified the necessity of updating TPACK instruments in line with technological advances, particularly in science education. Yet, instrument development tailored to Indonesian language learning remains underexplored. On the other hand, *Optimizing TPACK in Learning in the Digital Era: Systematic Literature Review* (Marisa & Rindaningsih, 2025) showed that mastery of TPACK can enhance digital learning interactivity, but its implementation in language learning has not been adequately addressed.

This study, therefore, seeks to fill this gap by systematically reviewing how the TPACK framework can serve as a solution in Indonesian language education within the digital era. Although previous studies have also employed literature review methods, this research differs in its explicit focus on Indonesian language learning. The objectives are twofold: first, to describe how TPACK has been implemented across different educational levels—from primary schools to higher education particularly in relation to receptive and productive language skills; and second, to analyze both the opportunities and challenges of TPACK implementation in Indonesian language teaching through an examination of the recommendations provided in journal articles, thereby offering a more realistic understanding of TPACK practices in the field.

Research Method

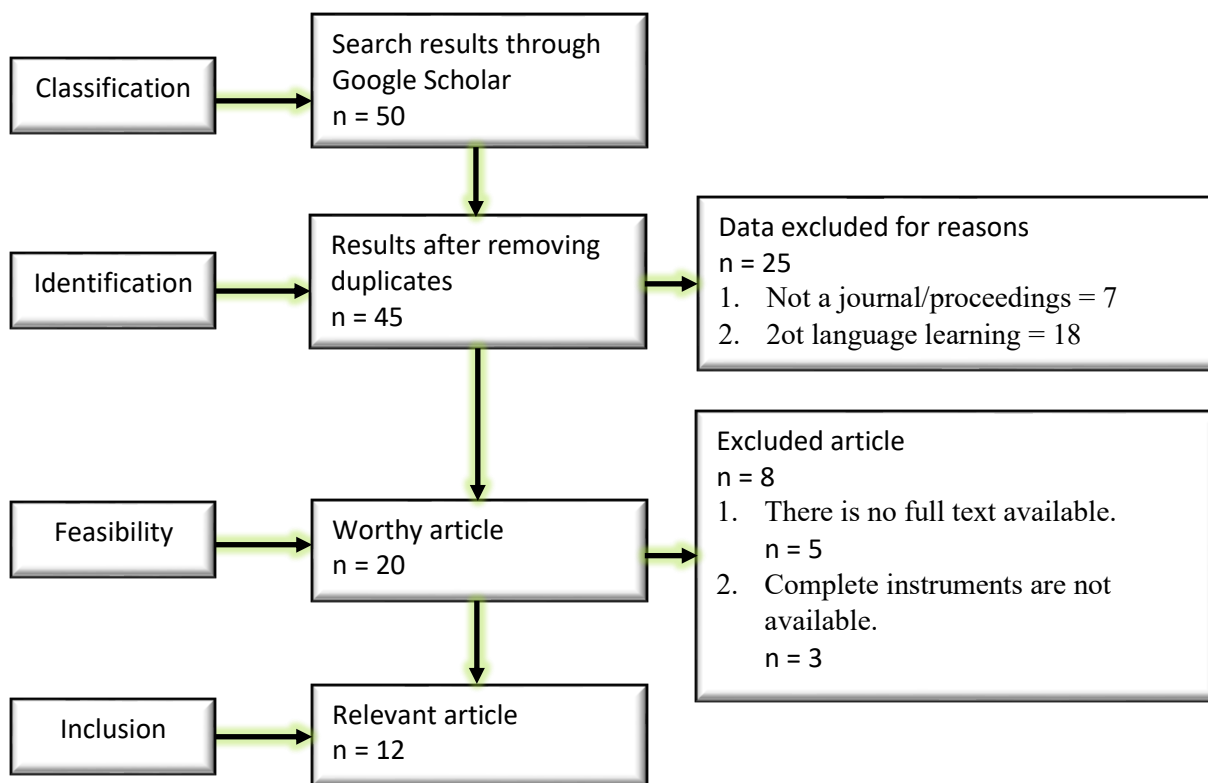
This study adopts the Systematic Literature Review (SLR) method to provide a comprehensive examination of the implementation of the Technological Pedagogical Content Knowledge (TPACK) framework in Indonesian language instruction as a pedagogical response to the demands of the digital era. The data for this review consist of peer-reviewed journal articles and conference proceedings directly relevant to the integration of TPACK in Indonesian language education. Sources were retrieved from nationally recognized databases, namely Google Scholar and SINTA. The process of data collection and analysis followed four essential stages: (1) establishing classifications and methodological approaches, (2) conducting systematic searches and reference selection, (3) analyzing and interpreting the data, and (4) synthesizing the findings into a final report.

The initial search phase was conducted through Google Scholar, focusing on articles containing the keywords “TPACK, digital era learning” and restricted to publications from 2020 to 2025. All eligible articles were systematically documented in a review matrix prior to in-depth analysis, with particular attention to research findings and pedagogical recommendations. For data analysis, this study employed content analysis techniques to identify patterns, trends, and the pedagogical relevance of TPACK in the development of language skills within Indonesian language teaching. To enhance the credibility and trustworthiness of the findings, the study applied theoretical triangulation and maintained a systematic audit trail documenting the search strategies, inclusion criteria, and reference selection process.

A Phrase Representing the Topic of Discussions

Through the data retrieval process, a total of 12 eligible studies—comprising journal

articles and conference proceedings—were identified as relevant to the objectives of this research. The selection of these 12 studies was conducted in accordance with the procedures described in the methodology section. The documented results of the audit trail are presented as follows:



The general information of the 12 research data is as follows:

Table I: General Information of Research Data

No.	Publication	Authors	Title
TP-BI-01	JPSS: Jurnal Pendidikan Sang Surya, Volume 10, Nomor 2	Aulia Mahgfira Cahyani, Sitti Aida Azis, dan Andi Paidi	Pengaruh Pendekatan Technological Pedagogical Content Knowledge (TPACK) Berbasis YouTube terhadap Keterampilan Menyimak Dongeng
TP-BI-02	JPSS: Jurnal Pendidikan Sang Surya, Volume 11, Nomor 1	Anggraini Waris, Syekh Adiwijaya Latief, Anin Asnidar	Pengaruh Pendekatan Technological Pedagogical and Content Knowledge (TPACK) Berbasis Canva dalam Pembelajaran Bahasa Indonesia Siswa Kelas VII.2 SMPN 3 Pallangga Kabupaten Gowa
TP-BI-03	Pendas : Jurnal Ilmiah Pendidikan Dasar, Volume 10 Nomor 02,	Aprillia Eka Putri, Putri Rahmi	Penerapan Pendekatan TPACK untuk Meningkatkan Kemampuan Penulisan Huruf Kapital Siswa Kelas III SD Negeri Blang Bintang Aceh Besar

TP-BI-04	Pendas : Jurnal Ilmiah Pendidikan Dasar, Volume 10 Nomor 02,	Kadek Tari Melyana, Achmad Wahidy, Sonia Anisah Utami	Pengaruh Video Animasi Berbasis TPACK terhadap Kemampuan Menyimak Siswa Mata Pelajaran Bahasa Indonesia Kelas II SD Negeri 30 Palembang
TP-BI-05	PEDALITRA IV : Seminar Nasional Bahasa, Sastra, Dan Pengajarannya, Vol. 4. No.1 (2024)	Ni Wayan Sudarti	Implementasi Model Pembelajaran Problem Based Learning (PBL) Berbantuan Media Pembelajaran Berbasis Technological Pedagogical Content Knowledge (TPACK) sebagai Upaya Meningkatkan Keterampilan Berbahasa Indonesia
TP-BI-06	JiIP (Jurnal Ilmiah Ilmu Pendidikan) Volume 7, Nomor 10	K Noviyanti, Kiki Rezeki Amelia, Yenny Puspita	Penerapan Pendekatan TPACK untuk Meningkatkan Aktivitas Peserta Didik Materi Teks Cerita Sejarah Kelas XII Sekolah Menengah Atas
TP-BI-07	Workshop Nasional Penguatan Kompetensi Guru Sekolah Dasar 2020. SHEs: Conference Series 3 (3)	Ani Kusbandiyah	Improving Class V Students' Indonesian Language Learning Outcomes Using the TPACK Approach
TP-BI-08	Early Childhood Education and Development Journal, Volume 5 Issue 3	Adinda Rohadati Aisy, Warananingtyas Palupi, Adriani Rahma Pudyaningtyas	Pengaruh Pembelajaran Berbasis TPACK terhadap Kemampuan Bahasa Ekspresif Anak Usia Dini
TP-BI-09	BAPALA, Volume 10 Nomor 4 Tahun 2023	Nina Nur Alfi Aulia	Pengaruh Pembelajaran Berdiferensiasi Berbasis TPACK terhadap Hasil Belajar Mengidentifikasi dan Meringkas Teks Eksplanasi Siswa Kelas VIII SMPN 42 Surabaya
TP-BI-10	Prosiding Seminar Nasional Pendidikan Profesi Guru Universitas Sarjanawiyata Tamansiswa Vol. 3, No. 1, 2024	(Sagita et al., 2024)	Meningkatkan Motivasi Belajar Bahasa Indonesia Menggunakan Pendekatan TPACK Kelas 1 SDN Tegalrejo 2 Yogyakarta
TP-BI-11	Jurnal Skripta, Volume 10, nomor	Andriyanto Kurniawan, Benedictus Sudiyana, Nurmaningsih	Muatan Kemahiran Berbahasa Indonesia dalam Media Website sebagai Penguatan Pembelajaran Berbasis Technological Pedagogical and Content Knowledge (TPACK)

TP-BI-12	DIDAKTIS: Jurnal Pendidikan Bahasa dan Sastra Indonesia Vol. 1 No. 2	Ayinun Mardhiati	Technological, Pedagogical, and Content Knowledge (TPACK) untuk Penguasaan Konsep dan Kemandirian Belajar Bahasa Indonesia Siswa
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The presentation of the research findings and suggestions from the 12 data is as follows:

Table II: Research Finding

No. Data	Results	Recommendation
TP-BI-01	The YouTube-based Technological Pedagogical Content Knowledge (TPACK) approach has a significant effect on the listening skills of fifth-grade students at SDN Manjalling. This is evident from the increase in the average score from 52.7 in the pretest to 84.5 in the posttest, with the t-test results showing a significance value of 0.001 ($p < 0.05$).	-
TP-BI-02	The Canva-based TPACK approach can serve as an effective alternative learning strategy to be implemented in schools, particularly in Indonesian language learning, as it has a significant impact on improving the writing skills of Grade VII.2 students at SMPN 3 Pallangga. The application of this approach has been proven to enhance students' learning outcomes, both in terms of average scores and mastery percentage. The integration of Canva as an interactive visual medium encourages students to be more active, creative, and motivated in the writing process, especially in composing descriptive texts.	This study also recommends that teachers receive training in digital literacy and the use of technology-based learning media in order to improve the quality of both the learning process and student outcomes.
TP-BI-03	The research conducted at SD Negeri Blang Bintang, Aceh Besar, shows that the implementation of the TPACK approach can improve the ability of third-grade students in writing capital letters. This is evident from the increase in teacher activity from 88.7% in cycle I to 92.2% in cycle II, as well as the increase in student activity from 74.3% to 84.1%. In addition, the percentage of students' mastery in writing capital letters also rose from 59.7% in cycle I to 83.3% in cycle II.	-
TP-BI-04	There is a significant effect of using TPACK-based animated video media on students' listening skills. This can be seen from the increased enthusiasm and motivation of students in participating in lessons, their	-

	improved focus in listening to the material delivered, and their ease in completing the given exercises. In addition, the average posttest listening scores of students in the experimental class were higher than those in the control class. Furthermore, the results of the t-test analysis showed that H_0 was rejected, indicating that the use of TPACK-based animated video media has a significant effect on the listening skills of second-grade elementary school students.	
TP-BI-05	Learning media based on Technological Pedagogical Content Knowledge (TPACK) generally utilize slides as the main medium for delivering material. Instructional videos are taken from YouTube to help teachers provide examples of the lesson content. WhatsApp groups serve as an intermediary medium to assist teachers in sending links for pre-tests and post-tests, while Google Forms, Kahoot, and Quizziz are used as assessment tools to evaluate students' understanding of the material that has been presented.	The suggestion that can be conveyed in this study is that teachers are encouraged to use the Problem-Based Learning (PBL) model assisted by Technological Pedagogical Content Knowledge (TPACK)-based learning media in the teaching and learning process so that learning becomes more enjoyable and students are able to think critically.
TP-BI-06	Learning historical text values through the TPACK approach has been proven to improve students' learning outcomes. This approach integrates technological, pedagogical, and content aspects in a unified learning process. Research findings indicate that the TPACK approach has a positive impact on enhancing students' achievement. This is evident from the increase in the percentage of student mastery after its implementation. Thus, TPACK can serve as an effective strategy in technology-based learning.	Students are expected to be motivated and gain new experiences and insights in learning Indonesian. Teachers are encouraged to apply the TPACK approach as an alternative, more innovative teaching strategy. Future researchers may develop the application of the TPACK approach in other materials or learning contexts.
TP-BI-07	The TPACK approach in learning to write <i>pantun</i> has been proven to increase students' motivation, interest, and participation. This has a positive impact on learning outcomes, with the mastery percentage rising from 78% in cycle I to 89% in cycle II, and reaching 100% in cycle III	Teachers are advised to involve students in the use of technology through the TPACK approach to enhance their understanding of the material. Schools also need to encourage teachers to continuously utilize technology in learning to support the improvement of student learning outcomes.
TP-BI-08	This study shows that TPACK-based learning has a positive effect on children's expressive language skills. This is evidenced by a significance value of < 0.05 and a significant difference in posttest averages between the	The suggestions from this study involve three parties. First, schools are expected to provide training and technological facilities to support TPACK-based learning. Second,

	experimental and control groups. After receiving the TPACK treatment, children's abilities improved both in terms of scores and behavior, such as confidently expressing opinions, responding with complex sentences, and being able to retell stories. Learning became more active and enjoyable. Thus, the research hypothesis is accepted.	teachers are encouraged to prepare and use various TPACK learning media, such as educational games, PowerPoint, and videos. Third, future researchers are advised to explore TPACK theory more deeply and use a larger sample to ensure more accurate and generalizable research results
TP-BI-09	The hypothesis test results prove that TPACK-based differentiated learning has a significant effect on the learning outcomes of eighth-grade students at SMP Negeri 42 Surabaya. This learning approach is effective in improving students' ability to identify and summarize explanatory texts. The significance value for the identification skill is 0.000 with a t-value of 5.879, and for the summarizing skill is 0.002 with a t-value of 3.232. Both results indicate that the alternative hypothesis is accepted. Thus, the TPACK approach is proven to be effective in Indonesian language learning.	The suggestion for teachers is to implement TPACK-based differentiated learning more extensively in the learning process, with well-prepared lesson plans, varied methods, and mastery of technology. Meanwhile, future researchers, particularly students of the Indonesian Language and Literature Education program, are expected to utilize the findings of this study and further develop other learning methods and media to maximize learning outcomes.
TP-BI-10	The research findings show that the TPACK approach is effective in improving the ability of first-grade students at SDN Tegalrejo 2 Yogyakarta to identify descriptive vocabulary. In cycle I, the student mastery percentage was 66% in the "fair" category, which increased to 84% in the "good" category in cycle II. This improvement exceeded the researcher's target of 75%. These findings indicate that the TPACK approach can significantly enhance students' motivation and learning outcomes in Indonesian language learning.	-
TP-BI-11	Indonesian language learning based on TPACK can be carried out by utilizing educational websites. Students learn through platforms such as Ruang Guru, Zenius, Rumah Belajar, and Kejarcita.id, which provide various interactive materials. Through these media, language skills such as speaking, listening, reading, and writing can be comprehensively developed. The use of technology makes students more engaged and active in understanding the lesson content. Thus, the integration of TPACK in Indonesian language learning has been proven effective in improving students' competencies.	-
TP-BI-12	The TPACK (Technology, Pedagogy, and	It is recommended that teachers

	Content Knowledge) approach applied in Indonesian language learning can enhance students' conceptual mastery and learning independence at SMP Negeri 32 Makassar. Students' mastery of Technology, Pedagogy, and Content Knowledge in Indonesian language learning through blended learning at SMP Negeri 32 Makassar represents a form of learning that already embodies the Merdeka Belajar program.	utilize the TPACK approach in classroom activities, as it can provide students with varied learning experiences that are beneficial for an effective learning process.
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The implementation of TPACK is assumed to have relevance to Indonesian language learning, particularly in relation to language skills. The following is an explanation of how effective the application of TPACK is and how it influences language skills.

1. Application of TPACK in Receptive Language Skills

Based on the research data, three studies—or approximately 25% of the total—support the application of TPACK in relation to receptive language skills. Receptive skills consist of listening and reading. Listening is considered one of the most complex language skills, as it involves more than hearing; it requires processes of comprehension and interpretation of meaning. Tarigan (2008) explains that listening is an activity of attentively perceiving oral symbols with understanding, appreciation, and interpretation in order to obtain information and capture communicative messages. Similarly, Saddhono (2014) emphasizes that listening is a process involving activities such as hearing, identifying, interpreting, evaluating the interpretation, and responding to implied messages. Thus, listening is not merely a physical act but also a crucial cognitive and affective skill in both communication and language learning.

In addition, reading is an essential skill in language mastery because it serves as a primary means of acquiring information, broadening knowledge, and enhancing critical thinking abilities. Nurhadi (2010) stresses that reading is not simply the act of pronouncing written symbols but also the process of understanding, interpreting, and evaluating the content of texts. Study No. TP-BI-01 indicated that TPACK significantly influenced listening skills through the use of YouTube as a learning medium. Study No. TP-BI-04 supported this finding, demonstrating that TPACK had a positive effect on listening skills when animated videos were used. Furthermore, Study No. TP-BI-11 confirmed the relevance of TPACK for receptive reading skills, showing that it effectively improved students' ability to summarize explanatory texts.

2. Application of TPACK in Productive Language Skills

Based on the research data, five studies—or approximately 42% of the total—support the application of TPACK in relation to productive language skills, which consist of speaking and writing. Speaking is a fundamental skill that functions as the primary means of oral communication in both daily life and academic contexts. Tarigan (2008) defines speaking as the ability to produce articulated sounds or words to express, convey, and communicate thoughts, ideas, and feelings. Writing, on the other hand, is a productive language skill used to express ideas, emotions, and information in the form of graphic symbols. According to Tarigan (2008), writing is a communication skill used indirectly to transmit ideas, thoughts, and feelings to others through written language.

Evidence supporting the application of TPACK to speaking skills is found in Study No. TP-BI-08, which focused on early childhood learners. The study revealed that after applying TPACK, children demonstrated improved abilities such as expressing opinions, providing complete answers, and restating ideas orally. Regarding writing skills, evidence is provided in Studies No. TP-BI-02, TAPI-BI-03, TP-BI-07, and TP-BI-09. Study No. TP-BI-02 applied TPACK using Canva as a medium to enhance descriptive writing skills, with findings indicating increased student motivation and active participation in writing activities. Study No. TP-BI-03 supported this evidence, reporting a 23.6% improvement in the mastery of capital letter writing among elementary school students in Blang Bintang, Aceh. Similarly, Studies No. TP-BI-07 and TP-BI-09 demonstrated the effectiveness of TPACK in the teaching of traditional poetry (*pantun*) and explanatory texts.

3. Application of TPACK in Non-Language Skills

Beyond its impact on receptive and productive language skills, the findings also indicate that TPACK is effective in enhancing non-language-related competencies. These include conceptual understanding, learning autonomy, as well as increased motivation and overall learning outcomes. Approximately 33% of the total data—or four studies—support this dimension of TPACK application, namely Studies No. TP-BI-05, TP-BI-06, TP-BI-10, and TP-BI-12.

The most notable evidence is found in Studies No. TP-BI-06 and TP-BI-10. Study No. TP-BI-06 reported a 10% improvement in student motivation, interest, and active

participation in learning historical narrative texts at the senior high school level. Similarly, Study No. TP-BI-10 demonstrated an 18% improvement in motivation and learning outcomes among first-grade students at SDN Tegalrejo 2, Yogyakarta, further confirming that TPACK can effectively enhance both motivation and achievement in learning.

Based on the overall findings, it can be concluded that the implementation of *Technological Pedagogical Content Knowledge* (TPACK) in Indonesian language learning tends to be dominated by productive language skills, particularly speaking and writing, which account for the largest proportion of the research data. In contrast, receptive language skills, namely listening and reading, occupy a minority position with a smaller amount of supporting data. Interestingly, the results also reveal that non-language aspects, such as concept mastery, learning autonomy, motivation, and learning outcomes, constitute a relatively large proportion, nearly approaching that of receptive language skills. This indicates that the application of TPACK is not only relevant for enhancing language skills but also makes a significant contribution to the development of non-language aspects that support overall learning success.

Conclusions

Based on the analysis, the implementation of *Technological Pedagogical Content Knowledge* (TPACK) has a positive impact on various aspects of both language and non-language skills. In receptive language skills (25% of the total data), TPACK has been proven effective in enhancing listening and reading abilities through the use of digital media such as YouTube, animated videos, and explanatory texts. In productive language skills (42% of the total data), TPACK contributes to the development of speaking and writing skills, as evidenced by improvements in students' confidence to express opinions, ability to articulate ideas, and writing proficiency supported by technology-based media such as Canva and other learning applications. Meanwhile, in non-language skills (33% of the total data), TPACK has been shown to improve concept mastery, learning autonomy, motivation, and overall learning outcomes. Thus, TPACK can be concluded as a relevant, effective, and adaptive instructional model for supporting Indonesian language learning in the digital era.

For Indonesian language teachers, it is recommended to adopt the *Technological Pedagogical Content Knowledge* (TPACK) model in the teaching and learning process. The implementation of TPACK enables teachers to integrate technology, pedagogy, and content more effectively, making learning more interactive, engaging, and relevant to students' needs

in the digital era. Teachers are encouraged to select technology-based media that align with the characteristics of the learning material, such as animated videos, digital platforms, or interactive learning applications, to enhance both receptive and productive language skills.

For researchers, further studies are needed on the implementation of TPACK, particularly in the field of Indonesian literacy and language learning. This is essential given the limited number of studies that specifically examine the application of TPACK to language skills, including listening, reading, speaking, and writing. Future research is expected to enrich the body of knowledge, identify more effective strategies, and provide significant contributions to both theoretical development and practical implementation of Indonesian language teaching in the digital era.

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