International Journal of Educational Research
Volume. 1, Number. 2, June 2024
e-ISSN : 3047-6038; p-ISSN : 3047-6046; Page. 74-98
DOI: https://doi.org/10.62951/ijer.v1i2.282
Available online at: https://international.aripi.or.id/index.php/IJER

Technology Integration in English Language Teaching: Analysis of Teachers' Perceptions and Practices in the Digital Era

Andi Suwarni[1*], Nurasia Natsir[2]
[1]Universitas Muhammadiyah Bone, Indonesia
[2]Sekolah Tinggi Ilmu Administrasi Yappi, Indonesia
Email: andisuwarni305@unimbone.ac.id [1], nurasianatsir@stiayappimakassar.ac.id [2]

*Author correspondence: andisuwarni305@unimbone.ac.id**

Abstract. *This research analyzes teachers' perceptions and practices regarding technology integration in English language teaching within the Indonesian educational context. Using a mixed methods approach, this study involved 120 English teachers from various educational levels (primary, junior high, senior high, and higher education) through an online survey, with 15 teachers selected for in-depth interviews and classroom observations. The findings reveal a gap between teachers' positive perceptions of technology (M=4.21 on a 5-point scale) and actual implementation in teaching practices (M=3.15). Statistical analysis identified four main factors influencing technology integration: teachers' digital competence (β=0.43, p<0.01), institutional support (β=0.38, p<0.01), teachers' pedagogical beliefs (β=0.35, p<0.01), and infrastructure accessibility (β=0.32, p<0.01). Qualitative data revealed that while teachers acknowledge the potential of technology to increase student motivation and create authentic language learning environments, they face challenges in aligning technology use with learning objectives, classroom management, and learning assessment. This research provides recommendations for teacher professional development and educational policies that support effective technology integration in English language teaching.*

Keywords: *Digital competence, English language teaching, Pedagogical practices,Teacher perceptions, Technology integration.*

1. INTRODUCTION

The digital era has significantly transformed the landscape of language education, with technology offering various possibilities to enhance learning experiences and provide access to authentic language resources that were previously difficult to reach, especially in contexts where English is taught as a foreign language (EFL). In the last two decades, technology integration in English language teaching has become an important focus in educational research and policy development worldwide (Golonka et al., 2014; Chun et al., 2016).

In Indonesia, national education policies increasingly emphasize the importance of integrating information and communication technology (ICT) in the teaching and learning process, including English language teaching. The revised 2013 Curriculum and the Merdeka Curriculum explicitly mention digital competence as an integral part of 21st-century skills that need to be developed in students (Ministry of Education and Culture, 2018; 2022). Additionally, the COVID-19 pandemic has accelerated the adoption of educational technology by forcing educational institutions to shift to remote and hybrid learning.

Received: May 16, 2024; Revised:May 29, 2024; Accepted:June 17, 2024; Published: June 30, 2024

Nevertheless, the success of technology integration in English language teaching does not solely depend on the availability of infrastructure or supportive policies, but also on teachers' perceptions, beliefs, and practices as the main implementation agents (Ertmer et al., 2012). Teachers play a central role in determining how, when, and why technology is used in the language learning process. A deep understanding of teachers' perceptions and practices related to technology integration becomes essential to identify factors that support or hinder the effective use of technology in English language teaching.

Previous research has explored various aspects of technology integration in English language teaching in Indonesia, including the use of mobile applications (Yudhiantara & Saehu, 2017), social media (Marzuki & Nurpahmi, 2019), and online learning platforms (Silviyanti & Yusuf, 2017). However, there is still a gap in comprehensive understanding of how English teachers in Indonesia perceive and implement technology in their pedagogical practices, as well as the factors that influence their decisions.

This research aims to fill that gap by analyzing the perceptions and practices of English teachers in Indonesia regarding technology integration, and identifying factors that facilitate or hinder the effective use of technology in language learning. By understanding the teacher perspective and implementation context, this research is expected to provide insights for the development of policies and programs that support meaningful technology integration in English language teaching.

2. LITERATURE REVIEW

Technology Integration in Language Teaching

Technology integration in language teaching refers to the meaningful use of technological tools and resources to support the development of learners' language competence (Levy, 2009). Different from merely using technology as an addition, effective technology integration involves the use of technology that is integrated with learning objectives, content, and pedagogical practices (Koehler & Mishra, 2009).

In the context of language learning, technology can support various aspects of language acquisition, including receptive skills (listening and reading) and productive skills (speaking and writing), as well as linguistic components such as grammar and vocabulary (Stockwell, 2012). Technology can also facilitate student-centered learning approaches, task-based learning, and communicative competence development (Chapelle & Sauro, 2017).

Previous research has shown various benefits of technology integration in language teaching, including increased student motivation and engagement (Golonka et al., 2014), access to authentic language input (Thorne & Reinhardt, 2008), personalized feedback (Godwin-Jones, 2019), and opportunities for interaction and collaboration (O'Dowd, 2018). However, the effectiveness of technology integration depends on various factors, including the compatibility between the chosen technology and learning objectives, good task design, and adequate support for students and teachers (Chun et al., 2016).

Teacher Perceptions and Beliefs about Technology

Teacher perceptions and beliefs play an important role in determining how technology is integrated into pedagogical practices. Ertmer (2005) distinguishes between external barriers (first-order barriers) such as lack of access to devices or technical support, and internal barriers (second-order barriers) such as pedagogical beliefs and attitudes towards technology. Research shows that although external barriers can be overcome, internal barriers are often more difficult to change and can have a greater influence on technology integration decisions (Ertmer et al., 2012).

Teachers' beliefs about the pedagogical value of technology can be influenced by various factors, including their personal experiences with technology, their professional experiences with technology use in teaching, and the institutional and social context in which they teach (Tondeur et al., 2017). Additionally, teachers' beliefs about how language is learned and how it should be taught can also influence how they view the role of technology in language learning (Johnson, 2006).

Factors Influencing Technology Integration

Various models have been developed to understand the factors that influence technology integration in teaching. The TPACK (Technological Pedagogical Content Knowledge) model developed by Koehler & Mishra (2009) emphasizes the importance of interaction between teachers' technological, pedagogical, and content knowledge. This model suggests that effective technology integration requires not only knowledge about the technology itself but also understanding of how technology can interact with content and pedagogical approaches.

Other models, such as the TAM (Technology Acceptance Model) developed by Davis (1989) and UTAUT (Unified Theory of Acceptance and Use of Technology) by Venkatesh et al. (2003), focus on factors that influence the acceptance and use of technology, including perceptions of usefulness and ease of use, social norms, and facility conditions. Tondeur et al. (2017) developed the SQD (Synthesis of Qualitative Data) model that identifies key strategies

for preparing teachers to integrate technology, including the roles of modeling, reflection, and instructional design.

In the Indonesian context, several specific factors have been identified, including limitations in infrastructure and internet connectivity, especially in rural and remote areas (Habibi et al., 2018), lack of sustainable professional development (Hidayati, 2016), and digital gaps between generations of teachers (Relmasira et al., 2018).

Technology Integration Practices in English Language Teaching

Technology integration practices in English language teaching encompass various approaches and applications. Technology can be used to support the development of specific language skills, such as using podcasts to enhance listening skills (Abdous et al., 2012), blogs for writing skills (Aydin, 2014), video-based communication for speaking skills (Jauregi et al., 2012), and various applications for vocabulary and grammar development (Stockwell, 2012).

Additionally, technology can also support broader pedagogical approaches, such as task-based learning (Thomas & Reinders, 2010), content and language integrated learning (CLIL) (Coyle et al., 2010), and project-based language learning (Dooly & Sadler, 2016). Recent developments also include the use of mobile applications for language learning (Godwin-Jones, 2017), virtual and augmented reality (Lin & Lan, 2015), and various forms of intelligent technologies such as adaptive language tutors and the use of artificial intelligence (Chapelle & Sauro, 2017).

In the Indonesian context, some documented practices include the use of social media for language interaction (Marzuki & Nurpahmi, 2019), mobile applications for independent learning (Yudhiantara & Saehu, 2017), and blended learning platforms that integrate face-to-face learning with online activities (Wijayanti & Priyatno, 2019). However, most research focuses on specific educational institution contexts or specific technologies, and provides less comprehensive overview of technology integration practices across various educational levels.

Conceptual Framework

Based on the literature review, this research develops a conceptual framework that connects teacher perceptions, contextual factors, and technology integration practices in English language teaching. This framework integrates elements from the TPACK model (Koehler & Mishra, 2009), the SQD model (Tondeur et al., 2017), and considerations of the specific Indonesian context.

The conceptual framework illustrates that technology integration practices in English language teaching are shaped by the complex interplay of three overarching dimensions: teacher individual factors, institutional factors, and broader contextual factors. Teacher

individual factors include perceptions and beliefs about technology, technological, pedagogical, and content knowledge (TPACK), prior experiences with technology, as well as motivation and self-efficacy. Institutional factors encompass the availability and accessibility of technological infrastructure, the provision of technical and pedagogical support, institutional policies and expectations, and the overall culture surrounding technology use within educational settings. Meanwhile, broader contextual factors involve national education policies, socio-economic conditions and the digital divide, community and parental expectations, and global trends in education and technology. These interconnected elements collectively influence how teachers perceive, adopt, and implement technology in their English language teaching practices.This framework suggests that to comprehensively understand technology integration in English language teaching, it is necessary to consider not only individual teachers' perceptions and practices but also the broader institutional and social context in which learning occurs.

3. RESEARCH METHODOLOGY

Research Design

This research uses a mixed methods approach with an explanatory sequential design. This approach was chosen to gain a comprehensive and in-depth understanding of teachers' perceptions and practices in integrating technology in English language teaching. The research design consists of two main phases: Quantitative Phase: Collection and analysis of quantitative data through surveys to identify general patterns of teacher perceptions and factors influencing technology integration. Qualitative Phase: Collection and analysis of qualitative data through in-depth interviews and classroom observations to gain a richer understanding of teachers' experiences and practices.

Population and Sample

The research population is English teachers at various educational levels (primary, junior high, senior high, and higher education) in Indonesia. The research sample consists of: Quantitative Sample: 120 English teachers selected using stratified random sampling to ensure balanced representation from various educational levels, geographic regions (urban and rural), and institution types (public and private). The sample distribution is as follows: Primary School Teachers: 30 respondents (15 urban, 15 rural). Junior High School Teachers: 30 respondents (15 urban, 15 rural). Senior High School Teachers: 30 respondents (15 urban, 15 rural). Higher Education Lecturers: 30 respondents (15 public, 15 private).

Qualitative Sample: 15 teachers selected from survey respondents using purposive sampling to represent various levels of technology integration (high, medium, low) based on survey results. The qualitative sample includes: 3 primary school teachers (2 urban, 1 rural), 4 junior high school teachers (2 urban, 2 rural), 4 senior high school teachers (2 urban, 2 rural), 4 higher education lecturers (2 public, 2 private

Research Instruments

Survey

The survey was developed to measure teachers' perceptions of technology integration, technology use practices in teaching, and factors influencing technology use. The survey instrument consists of several sections: Demographic Information: Age, gender, teaching experience, educational level, location, and institution type. Perceptions of Technology Integration: Adaptation from the Technology Acceptance Model (Davis, 1989) and Technological Pedagogical Content Knowledge (TPACK) Framework (Koehler & Mishra, 2009), using a 5-point Likert scale. Technology Integration Practices: Frequency and types of technology use in English language teaching, using a 5-point frequency scale. Factors Influencing Technology Integration: Measuring teachers' perceptions of supporting and hindering factors, using a 5-point Likert scale. Open-Ended Questions: Providing opportunities for respondents to express their perspectives on challenges and strategies in technology integration.

The content validity of the instrument was tested by a panel of experts consisting of three specialists in educational technology and language learning. The instrument reliability was tested in a pilot study with 30 English teachers, with Cronbach's alpha results ranging from 0.78 to 0.92 for various sub-scales, indicating good internal reliability.

Interview Protocol

Semi-structured interviews were designed to explore in-depth teachers' perceptions, experiences, and practices in integrating technology. The interview protocol includes questions about:Background and teaching experience, philosophy and approach in English language teaching, experiences and beliefs about technology use, specific practices of technology integration in teaching, challenges and strategies in technology integration, institutional support and professional development, reflection on the impact of technology on student learning.

Classroom Observation Rubric

Classroom observations were conducted to obtain data on actual technology integration practices in real learning contexts. A structured observation rubric was developed to document:Types of technology used, pedagogical purposes of technology use, roles of teachers and students during technology use, integration of technology with content and learning activities, technical and pedagogical challenges that arise, student engagement and responses to technology use.

Data Collection Procedures

Quantitative Phase

Online surveys were distributed to English teachers through a combination of email, professional social media groups, and educational networks. To increase the response rate, two reminders were sent at two-week intervals. The data collection process was conducted over a two-month period (September-October 2022).

Qualitative Phase

Based on the results of the survey analysis, 15 teachers were selected to participate in the qualitative phase of the study. In-depth interviews were conducted either face-to-face or via video conference, each lasting between 60 to 90 minutes and recorded with the participants' consent. Additionally, classroom observations were carried out for each participant, with one or two observation sessions per teacher, each lasting 90 to 120 minutes depending on schedule and availability. The qualitative data collection took place over a three-month period (November 2022-January 2023).

Data Analysis

Quantitative Analysis

Quantitative data were analyzed using: Descriptive statistics (frequency, mean, standard deviation) to describe teachers' perceptions and practices. Correlation analysis to identify relationships between demographic variables, perceptions, and technology integration practices. Multiple regression analysis to identify factors that significantly predict the level of technology integration in teaching. ANOVA to compare perceptions and practices among various teacher groups (based on educational level, location, etc.).

Qualitative Analysis

Qualitative data from interviews and classroom observations were analyzed using two main approaches. First, thematic analysis was conducted following Braun and Clarke’s (2006) framework, which involved familiarization with the data through transcription and repeated reading, generating initial codes, identifying themes, reviewing and refining those themes,

defining and naming the final themes, and producing the analytical report. Second, content analysis was applied specifically to the classroom observation data, focusing on the frequency and quality of technology use, as well as the nature of teacher-student interaction during technology-supported learning activities.

Data Integration

Results from quantitative and qualitative analyses were integrated using several APA-aligned strategies. First, methodological triangulation was employed to ensure consistency and validity across survey data, interviews, and classroom observations. Second, a contrast case exploration was conducted to examine the distinguishing factors among teachers with varying levels of technology integration. Finally, an integrated analysis approach was adopted to holistically address the research questions by synthesizing insights drawn from both quantitative and qualitative findings.

Research Ethics

This research was conducted with the approval of the Research Ethics Committee at the researcher's university, adhering to established ethical principles. All participants provided informed consent after receiving complete information regarding the purpose, procedures, and use of the data. Confidentiality was strictly maintained by anonymizing participant identities and institutions through the use of pseudonyms in the reporting of results. Participants were also informed of their right to withdraw from the study at any time without facing any negative consequences. Additionally, a summary of the research findings will be shared with all participating individuals and institutions to ensure transparency and mutual benefit.

4. RESEARCH RESULTS

Respondent Profile

Of the 150 teachers invited to participate in the survey, 120 provided complete responses (80% response rate). Table 1 presents the demographic characteristics of respondents.

Table 1. Demographic Characteristics of Survey Respondents (N=120)

Characteristic	Category	Frequency	Percentage
Gender	Male	38	31.7%
	Female	82	68.3%
Age	< 30 years	27	22.5%
	30-40 years	48	40.0%
	41-50 years	31	25.8%
	> 50 years	14	11.7%
Teaching Experience	< 5 years	22	18.3%
	5-10 years	38	31.7%

Characteristic	Category	Frequency	Percentage
	11-20 years	42	35.0%
	> 20 years	18	15.0%
Educational Level	Primary School	30	25.0%
	Junior High School	30	25.0%
	Senior High School	30	25.0%
	Higher Education	30	25.0%
Location	Urban	75	62.5%
	Rural	45	37.5%
Institution Type	Public	72	60.0%
	Private	48	40.0%
Qualification	Bachelor's Degree	73	60.8%
	Master's Degree	43	35.8%
	Doctoral Degree	4	3.3%

For the qualitative phase, 15 teachers participated in in-depth interviews and classroom observations. Table 2 presents the profiles of qualitative phase participants.

Table 2. Profiles of Qualitative Phase Participants (N=15)

No	Pseudonym	Gender	Age	Educational Level	Location	Teaching Experience	Technology Integration Level*
1	Ani	F	32	Primary School	Urban	7 years	High
2	Budi	M	45	Primary School	Urban	18 years	Medium
3	Citra	F	29	Primary School	Rural	4 years	Low
4	Deni	M	38	Junior High School	Urban	12 years	High
5	Evi	F	34	Junior High School	Urban	9 years	Medium
6	Fandi	M	41	Junior High School	Rural	15 years	Low
7	Gita	F	27	Junior High School	Rural	3 years	Medium
8	Hadi	M	36	Senior High School	Urban	11 years	High
9	Indah	F	44	Senior High School	Urban	17 years	Medium
10	Joko	M	48	Senior High School	Rural	20 years	Low
11	Kartika	F	33	Senior High School	Rural	8 years	High
12	Lukman	M	39	Higher Education	Urban	14 years	High
13	Mira	F	42	Higher Education	Urban	16 years	Medium
14	Nando	M	51	Higher Education	Rural	22 years	Low
15	Olivia	F	35	Higher Education	Rural	10 years	Medium

*Technology integration level based on survey scores: High (>4.0), Medium (3.0-4.0), Low (<3.0)

Teachers' Perceptions of Technology Integration

Survey data analysis shows that in general, English teachers have positive perceptions of technology integration in teaching (M=4.21, SD=0.76, scale 1-5). Table 3 presents the average scores for various aspects of perception.

Table 3. Teachers' Perceptions of Technology Integration (N=120)

Perception Aspect	Mean	SD
Usefulness of technology for language learning	4.53	0.64
Ease of use of technology	3.87	0.92
Compatibility of technology with pedagogical approaches	4.12	0.78
Added value of technology compared to traditional methods	4.35	0.71
Impact of technology on student motivation	4.48	0.67
Impact of technology on learning outcomes	4.06	0.83
Sustainability of technology use	3.89	0.98
Overall perception score	4.21	0.76

Note: Scale 1-5, where 1=Strongly Disagree and 5=Strongly Agree

ANOVA analysis shows significant differences in perceptions based on age ($F(3,116)=5.27$, $p<0.01$) and teaching experience ($F(3,116)=4.83$, $p<0.01$), where younger teachers with less teaching experience tend to have more positive perceptions of technology integration. There were no significant differences based on educational level ($F(3,116)=1.28$, $p=0.285$) or location ($t(118)=1.92$, $p=0.057$).

Interview results deepen understanding of teachers' perceptions. Thematic analysis identifies five main themes related to perceptions:

1. Technology as a motivation tool: Most teachers (13 out of 15) emphasized the role of technology in increasing student motivation and engagement.

"My students are much more enthusiastic when we use technology. They see it as something relevant to their daily lives." (Ani, Primary School Teacher)

2. Technology as a bridge to authentic language use: Almost all teachers (14 out of 15) appreciate how technology provides access to authentic language materials and real-world usage contexts.

"With the internet, I can show videos, podcasts, or current news articles in English. This makes learning more relevant and shows that English is a living communication tool, not just an academic subject." (Hadi, Senior High School Teacher)

3. Technology and time demands: Despite seeing the benefits of technology, many teachers (9 out of 15) were concerned about the time needed to prepare and implement technology-based learning.

"Integrating technology meaningfully requires extra preparation. With a high teaching load, it's sometimes difficult to find time for it." (Mira, Higher Education Lecturer)

4. Ambivalence about learning impact: Teachers showed diverse views about the impact of technology on learning outcomes, with some (7 out of 15) expressing doubts about its long-term effectiveness.

"I see students very engaged when using apps or games, but I'm not always sure how deeply they are learning. Sometimes I worry they are more focused on the technology than the language content." (Budi, Primary School Teacher)

5. Shift in teacher role: Some teachers (6 out of 15) reflected on how technology changes their role in the classroom, from a source of knowledge to a learning facilitator.

"With so many online learning resources, my role has changed. I'm no longer the only source of information, but more of a guide who helps students navigate and understand all the information available." (Lukman, Higher Education Lecturer)

Technology Integration Practices

Survey data analysis shows that although teachers' perceptions of technology are generally positive, actual implementation in teaching practices tends to be more moderate (M=3.15, SD=0.94, scale 1-5). Table 4 presents the frequency of use of various types of technology.

Table 4. Frequency of Technology Use in English Language Teaching (N=120)

Type of Technology	Mean	SD
Digital presentations (PowerPoint, etc.)	4.32	0.78
Learning videos	3.87	0.85
Language learning applications	2.95	1.15
Online learning platforms (LMS)	2.83	1.24
Social media for learning	2.64	1.32
Digital games/simulations	2.58	1.18
Online collaboration tools	2.47	1.27
Virtual/augmented reality	1.36	0.73
Overall practice score	3.15	0.94

Note: Scale 1-5, where 1=Never and 5=Very Often

Further analysis shows significant differences in technology integration practices based on educational level ($F(3,116)=8.42$, $p<0.001$), location ($t(118)=5.78$, $p<0.001$), and institution type ($t(118)=3.67$, $p<0.001$). Teachers at higher educational levels, in urban areas, and in private institutions show higher levels of technology integration.

Classroom observation data provide more detailed insights into how technology is integrated into teaching practices. Analysis identifies several usage patterns:

1. Limited vs. transformative use: Most observed teachers (9 out of 15) used technology as a replacement for traditional tools (e.g., PowerPoint presentations replacing blackboards) rather than to transform learning in ways not possible without technology.
2. Variation across language skills: Technology was most frequently used for receptive skills (listening and reading) and language components (vocabulary and grammar), with more limited use for productive skills (speaking and writing).
3. Teacher dominance vs. student-centered activities: In most observed classes (11 out of 15), technology was primarily used by teachers for presentation or demonstration, with more limited opportunities for students to interact directly with technology.

Interviews revealed several reasons for the gap between positive perceptions and more limited implementation:

1. Infrastructure limitations: Many teachers (especially in rural areas) reported limited access to devices, unstable internet connectivity, and lack of technical support.

"We only have one computer lab for the entire school. It's very difficult to schedule regular use, so I more often rely on traditional methods." (Citra, Rural Primary School Teacher)

2. Time limitations and workload: Almost all teachers (13 out of 15) mentioned time constraints as a main barrier to more intensive technology integration.

"Preparing meaningful technology-based learning requires more time. With 24 teaching hours per week plus administrative tasks, it's very difficult to find time for it." (Joko, Senior High School Teacher)

3. Lack of specific knowledge and skills: Some teachers (7 out of 15) acknowledged limitations in their knowledge about how to pedagogically integrate technology effectively.

"I know how to operate various applications, but I'm less confident about how to integrate them with language learning objectives effectively." (Evi, Junior High School Teacher)

4. Concerns about classroom management: Some teachers (6 out of 15) expressed concerns about classroom management challenges when using technology.

"When students use their own devices, it's difficult to ensure they stay focused on learning tasks and aren't distracted by social media or games." (Indah, Senior High School Teacher)

Factors Influencing Technology Integration

Multiple regression analysis was used to identify factors that significantly predict the level of technology integration in English language teaching. The regression model explains 64.7% of the variance in technology integration practices ($R^2 = 0.647$, $F(8,111) = 25.42$, $p < 0.001$). Table 5 presents the results of regression analysis.

Table 5. Results of Regression Analysis of Factors Influencing Technology Integration

Predictor Variable	β	t	p
Teacher digital competence	0.43	5.87	<0.01
Institutional support	0.38	5.21	<0.01
Teacher pedagogical beliefs	0.35	4.92	<0.01
Infrastructure accessibility	0.32	4.35	<0.01
Teaching experience	-0.18	-2.54	0.01
Workload	-0.15	-2.12	0.04
Educational level	0.13	1.87	0.06
Location (urban vs. rural)	0.12	1.73	0.09

The results show that four factors have a significant positive influence on technology integration: teacher digital competence, institutional support, teacher pedagogical beliefs, and infrastructure accessibility. Teaching experience and workload have a significant negative influence, while educational level and location do not appear as significant predictors in this regression model.

Qualitative data enrich understanding of these factors:

1. Teacher digital competence: Interviews revealed that the competence needed is more than just technical skills, but also knowledge about how to pedagogically integrate technology.

"Knowing how to use a particular application is one thing, but knowing when and how to integrate it into teaching to achieve specific objectives is a completely different thing." (Lukman, Higher Education Lecturer)

2. Institutional support: Teachers emphasized the importance of support from school leadership and colleagues.

"Our principal is very supportive of technological innovation. He not only provides resources but also provides time for teacher collaboration and sharing of best practices." (Ani, Primary School Teacher)

3. Pedagogical beliefs: Teachers' beliefs about how language is learned influence how they view and use technology.

"I believe that language is learned through authentic interaction. Technology allows my students to interact with native speakers and authentic materials that would not be possible otherwise." (Deni, Junior High School Teacher)

4. Infrastructure accessibility: Significant differences were observed between urban and rural schools, as well as between institutions with different resources.

"Our internet connection is unstable and bandwidth is limited. It's difficult to use online applications or stream videos with 30 students simultaneously." (Fandi, Rural Junior High School Teacher)

5. Teaching experience: Teachers with longer experience often expressed reluctance to change established practices.

"I have been teaching for 20 years and my methods have been successful. I'm not against technology, but I don't see a strong reason to change approaches that have proven effective." (Joko, Senior High School Teacher)

6. Workload: Almost all teachers highlighted challenges in balancing time demands with pedagogical innovation.

"With 24 teaching hours, administrative tasks, and extracurricular activities, there's almost no time to learn new technologies and design meaningful technology-based learning." (Mira, Higher Education Lecturer)

Gap Between Perceptions and Practices

Comparative analysis between perception and practice scores shows a significant gap ($t(119) = 11.83$, $p < 0.001$), where perception scores ($M = 4.21$, $SD = 0.76$) are consistently higher than practice scores ($M = 3.15$, $SD = 0.94$). Table 6 shows this gap based on various demographic characteristics.

Table 6. Gap Between Perceptions and Practices Based on Demographic Characteristics

Characteristic	Category	Perception Score	Practice Score	Gap
Educational Level	Primary School	4.18	2.84	1.34
	Junior High School	4.23	3.07	1.16
	Senior High School	4.19	3.26	0.93
	Higher Education	4.25	3.43	0.82
Location	Urban	4.27	3.47	0.80
	Rural	4.12	2.63	1.49
Experience	< 5 years	4.38	3.42	0.96
	5-10 years	4.27	3.27	1.00
	11-20 years	4.15	3.06	1.09
	> 20 years	4.02	2.75	1.27
Total	All respondents	4.21	3.15	1.06

ANOVA analysis shows that this gap is significantly larger among teachers in rural areas compared to urban areas ($F(1,118) = 18.27$, $p < 0.001$) and among teachers with longer teaching experience ($F(3,116) = 4.83$, $p < 0.01$). Differences in gaps based on educational level are also significant ($F(3,116) = 7.62$, $p < 0.001$), with smaller gaps at higher educational levels.

Qualitative data revealed several themes that explain this gap:

1. Contextual barriers: Teachers often cited factors beyond their control, such as inadequate infrastructure, institutional policies, and time limitations.

"I really want to use more technology. I see its potential. But with the conditions at our school, it's very difficult to make it happen." (Gita, Rural Junior High School Teacher)

2. Gap between theoretical and practical knowledge: Some teachers have a conceptual understanding of the benefits of technology but lack practical knowledge about its implementation.

"In theory, I understand how technology can enhance learning. But when trying to implement it, I often get lost and return to more familiar methods." (Budi, Primary School Teacher)

3. Resistance to change: Some teachers, especially more experienced ones, showed a gap between abstract beliefs and readiness to change practices.

"I agree that technology is important for modern education. But honestly, changing teaching methods I've developed over years isn't easy. There's comfort in routine." (Nando, Higher Education Lecturer)

4. Lack of sustainable professional development: Many teachers felt that the training they received was too general or not sustainable.

"We get workshops once a year about new technologies, but without follow-up or support when we try to implement them, it's difficult to maintain momentum." (Kartika, Senior High School Teacher)

Challenges and Strategies in Technology Integration

Qualitative data analysis identified several main challenges faced by teachers in integrating technology in English language teaching, as well as strategies they use to overcome them.

Main Challenges

Teachers in this study faced a variety of challenges in integrating technology into English language teaching, which can be categorized into four main areas. First, infrastructure and access challenges included unstable or slow internet connectivity, limited availability of hardware, unequal access to technology among students, and technical disruptions that

interfered with the learning process. Second, pedagogical challenges emerged, such as difficulties in aligning technology use with learning objectives, managing classrooms effectively during technology-based lessons, assessing technology-mediated learning outcomes, and balancing digital tools with traditional face-to-face interactions. Third, institutional challenges involved limited technical support, restrictive policies on device usage, misalignment between technology-based approaches and curriculum or exam expectations, and a lack of dedicated time for teacher collaboration. Lastly, personal challenges experienced by teachers included insufficient time to explore and design technology-enhanced learning, feelings of anxiety or lack of confidence in using new technologies, and concerns related to data privacy and security.

Effective Strategies

Teachers who successfully integrated technology effectively (especially those with high integration scores) implemented several of the following strategies:

1. **Gradual approach**:
    - Starting with simple technologies and gradually increasing complexity
    - Introducing one type of technology at a time

"I don't try to use all technologies at once. I start with one application that I master well, and after students and I are comfortable, then move to others." (Ani, Primary School Teacher)

2. **Clear pedagogical integration**:
    - Ensuring that technology use has clear pedagogical purposes
    - Integrating technology with familiar learning approaches

"I always ask: does this technology enrich learning or just add complexity? If there's no clear added value, I don't use it." (Hadi, Senior High School Teacher)

3. **Collaboration and sharing practices**:
    - Forming communities of practice with colleagues
    - Sharing resources and lesson plans

"We formed a group of English teachers interested in technology. We meet monthly to share ideas and support each other. This is very helpful." (Lukman, Higher Education Lecturer)

4. **Continuous professional learning**:
    - Utilizing online learning resources for self-development
    - Participating in professional networks

"I joined several social media groups for English teachers and follow webinars regularly. This is how I stay updated with the latest developments." (Deni, Junior High School Teacher)

5. **Involving students as partners**:
    - Leveraging students' technological knowledge
    - Encouraging students to discover and share language learning applications

"I don't need to be a technology expert. I learn a lot from my students. They often find new apps or websites that we then use in class." (Kartika, Senior High School Teacher)

6. **Contingency planning**:
    - Always having a backup plan if technology doesn't work
    - Anticipating potential problems and preparing solutions

"Experience has taught me to always have a plan B. If the internet doesn't work or there are technical issues, I can switch to alternative activities without losing learning momentum." (Olivia, Higher Education Lecturer)

Discussion

Perception vs. Reality: Addressing the Implementation Gap

The findings of this research reveal a significant gap between teachers' positive perceptions of technology and their actual implementation practices, in line with previous research on technology integration in educational contexts (Ertmer et al., 2012; Lawrence & Tar, 2018). This gap indicates that although teachers recognize the potential value of technology in English language teaching, they face various barriers that limit effective implementation.

The Technology Acceptance Model (TAM) suggests that perceptions of usefulness and ease of use are key factors influencing technology adoption (Davis, 1989). However, the results of this research show that positive perceptions about usefulness (M=4.53) and even relatively good perceptions about ease of use (M=3.87) do not always translate into consistent actual use. This suggests that technology adoption models in educational contexts may need to account for broader contextual factors, as suggested by Tondeur et al. (2017).

The implementation gap appears larger in rural areas and among more experienced teachers, indicating the importance of considering geographical context and generational factors in professional development strategies. These findings align with Habibi et al.'s (2018)

research identifying digital divides based on geographical location in Indonesia, and Karaseva et al.'s (2018) identification of generational differences in technology adoption by teachers.

Critical Factors in Effective Technology Integration

The regression model identifies four main factors influencing technology integration: teacher digital competence, institutional support, pedagogical beliefs, and infrastructure accessibility. These findings support the TPACK framework (Koehler & Mishra, 2009) which emphasizes the importance of integrated technological, pedagogical, and content knowledge, but also show that contextual factors such as institutional support and infrastructure cannot be ignored.

The significant influence of teachers' pedagogical beliefs (β=0.35) indicates that how teachers view the language learning process affects their decisions about technology use. This aligns with Johnson's (2006) research emphasizing the importance of aligning technological innovations with teachers' beliefs about language teaching and learning. Teachers who adopt communicative or task-based approaches tend to see technology as a tool that can support authentic interaction and meaningful language use, while those more oriented toward grammar teaching might see technology primarily as a tool for structured practice.

The finding that teaching experience negatively correlates with technology integration (β=-0.18) points to specific challenges in supporting more experienced teachers to adopt technology-based approaches. This finding is consistent with Zawacki-Richter et al.'s (2019) research identifying a "second digital divide" related not to access to technology but to the skills and disposition to use it effectively. More experienced teachers may have established pedagogical routines and require specific support to see the benefits of integrating new approaches.

Implications for Teacher Professional Development

The results of this research have important implications for professional development of English teachers in Indonesia. A "one-size-fits-all" approach to technology training is unlikely to be effective, given significant variations in perceptions, practices, and institutional contexts. Instead, professional development programs need to:

1. Focus on pedagogical integration, not just technical skills: Training should emphasize how technology can support specific language learning approaches and learning objectives, not just how to operate devices or applications.

2. Be tailored to teachers' needs at various career stages: New teachers may need support in integrating their technological knowledge with effective pedagogical practices, while more experienced teachers may need support in seeing how technology can enhance (not replace) established practices.
3. Be continuous and iterative: Instead of one-time workshops, professional development should provide ongoing support through communities of practice, mentoring, and opportunities for reflection and experimentation.
4. Be contextual and practical: Training should consider contextual realities such as infrastructure limitations, institutional policies, and teacher workload, and offer practical solutions to overcome these challenges.
5. Involve collaboration: Collaborative approaches where teachers can share practices, resources, and learning seem to be effective strategies identified in this research.

These findings align with the SQD (Synthesis of Qualitative Data) model developed by Tondeur et al. (2017), which emphasizes the importance of role modeling, reflection, collaborative instructional design, and ongoing support in preparing teachers to integrate technology.

Contextual Challenges and Potential Solutions

The infrastructure and accessibility challenges identified in this research, especially in rural areas, reflect broader digital divides in Indonesia and other developing countries (Habibi et al., 2018). Nevertheless, several creative strategies were identified by teachers in this research, including:

1. Carefully managed BYOD (Bring Your Own Device) approaches: Some schools lacking institutional infrastructure allow students to bring their own devices with clear protocols for appropriate use.
2. Offline applications and mobile learning: Using applications that can function offline or with minimal connectivity, and leveraging mobile devices that are more widely available than computers.
3. Judicious blended approaches: Integrating online and face-to-face elements in ways that maximize the strengths of each and address limitations.
4. Institutional collaboration: Partnering with other schools, universities, or organizations that have better infrastructure for joint projects and resource sharing.

Policy and institutional challenges also require consideration. Research findings show that institutional support ($\beta=0.38$) is a strong predictor of technology integration. This indicates the importance of school principals and institutional leaders' involvement in creating a culture

that supports technological innovation, providing necessary resources, and developing policies that facilitate (rather than hinder) technology use.

Technology Integration for Comprehensive Language Development

Classroom observation results reveal a tendency to use technology primarily for receptive skills (listening and reading) and language components (vocabulary and grammar), with more limited use for productive skills (speaking and writing). This indicates potential areas for development, considering how technology can support language production through computer-mediated communication, online collaboration, and content creation tools.

Chapelle & Sauro (2017) emphasize how technology can support meaning-centered and action-oriented language learning through online collaborative tasks, multimedia projects, and interaction with native speakers. These innovative practices were less evident in classroom observations and surveys, indicating a gap between the transformative potential of technology and its more limited use as a supporting tool for traditional approaches.

Some teachers in this research who successfully integrated technology for comprehensive language development demonstrated the following characteristics:

1. They explicitly connected technology use with communicative purposes and clear language learning outcomes.
2. They used technology to create spaces where students could use language in meaningful and authentic contexts.
3. They balanced accuracy and fluency development through a combination of structured activities and spontaneous communication.
4. They leveraged technology to extend language interaction beyond the classroom.
5. They helped students develop strategies for technology-supported independent language learning.

5. CONCLUSION AND RECOMMENDATIONS

Conclusion

This research analyzes the perceptions and practices of English teachers in Indonesia regarding technology integration in teaching. The main findings indicate that although teachers generally have positive perceptions of educational technology, there is a significant gap between these perceptions and actual implementation in classroom practices. This gap is influenced by various factors, including teacher digital competence, institutional support, pedagogical beliefs, and infrastructure accessibility.

The research also reveals how geographical context, educational level, and teaching experience influence teacher perceptions and practices, with larger implementation gaps observed in rural areas and among more experienced teachers. Effective strategies identified by teachers who successfully integrate technology include gradual approaches, clear pedagogical integration, collaboration with colleagues, continuous professional learning, student involvement as partners, and contingency planning.

The research results highlight the importance of considering not only technical aspects of technology integration but also pedagogical, institutional, and contextual dimensions. Effective technology integration in English language teaching requires alignment between the chosen technology, language learning objectives, teacher pedagogical beliefs, and the contextual realities of educational institutions.

Recommendations

Based on the research findings, several recommendations can be proposed for various stakeholders:

For English Teachers

Adopt a reflective approach to technology integration, considering how specific technologies can support specific language learning objectives, not using technology just because of its availability. Seek professional development opportunities that focus on pedagogical integration of technology in language teaching, not just technical skills. Collaborate with colleagues through communities of practice and professional networks to share ideas, resources, and effective technology integration strategies. Involve students as partners in identifying and using technology to support language learning, leveraging their familiarity with and interest in new technologies. Start with small steps, integrating one type of technology well before adding others, and developing contingency plans to address technical issues.

For Educational Providers and School Principals

Create a culture that supports innovation by providing time, space, and recognition for teachers to experiment and collaborate. Provide ongoing technical and pedagogical support, not just one-time training but also continued mentoring and consultation. Develop facilitating policies for meaningful technology use, addressing concerns about security and classroom management without imposing overly restrictive limitations. Invest in basic infrastructure needed for effective technology integration, considering innovative solutions for resource-limited contexts. Encourage differentiated professional learning that considers different needs of teachers at various career stages and with different levels of technological expertise.

For Education Policymakers

Develop national strategies to address digital divides in education, especially between urban and rural schools. Align curriculum and assessment with technology-supported learning approaches, ensuring that curriculum frameworks and national examinations do not hinder meaningful technology integration. Invest in continuous professional development for English teachers with a focus on technology-supported pedagogy, not just basic digital literacy. Support research and innovation in technology use for language learning, including the development of content and applications appropriate for local contexts. Facilitate partnerships between educational institutions, technology industries, and international organizations to expand access to technological resources and expertise.

For Future Research

Conduct longitudinal research to understand how teacher perceptions and practices evolve over time and in response to changes in technology and educational contexts. Expand geographical coverage to include more rural and remote areas in Indonesia, providing a more comprehensive understanding of challenges and strategies in various contexts. Investigate the impact of technology integration on student language learning outcomes, connecting teacher practices with language ability improvements. Explore student perspectives on technology use in English language teaching, including preferences, challenges, and learning strategies. Develop and test intervention models designed to support teachers in addressing the gap between perceptions and technology integration practices.

Effective technology integration in English language teaching requires a complex and contextual approach that considers not only the technological tools themselves but also how these tools interact with teacher pedagogical beliefs, institutional contexts, and student needs. By understanding this complexity and developing strategies to address identified challenges, education stakeholders can work together to harness the potential of technology in enhancing English language learning experiences and outcomes in Indonesia.

REFERENCES

Abdous, M., Camarena, M. M., & Facer, B. R. (2012). MALL technology: Use of academic podcasting in the foreign language classroom. *ReCALL, 24*(1), 76–95. https://doi.org/10.1017/S0958344011000265

Aydin, S. (2014). The use of blogs in learning English as a foreign language. *Mevlana International Journal of Education, 4*(1), 244–259. https://doi.org/10.13054/mije.13.79.4.1

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Chapelle, C. A., & Sauro, S. (Eds.). (2017). *The handbook of technology and second language teaching and learning*. Wiley-Blackwell.

Chun, D., Kern, R., & Smith, B. (2016). Technology in language use, language teaching, and language learning. *The Modern Language Journal, 100*(S1), 64–80. https://doi.org/10.1111/modl.12302

Coyle, D., Hood, P., & Marsh, D. (2010). *CLIL: Content and language integrated learning*. Cambridge University Press.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340. https://doi.org/10.2307/249008

Dooly, M., & Sadler, R. (2016). Becoming little scientists: Technologically-enhanced project-based language learning. *Language Learning & Technology, 20*(1), 54–78.

Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development, 53*(4), 25–39. https://doi.org/10.1007/BF02504683

Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education, 59*(2), 423–435. https://doi.org/10.1016/j.compedu.2012.02.001

Godwin-Jones, R. (2017). Smartphones and language learning. *Language Learning & Technology, 21*(2), 3–17.

Godwin-Jones, R. (2019). Riding the digital wilds: Learner autonomy and informal language learning. *Language Learning & Technology, 23*(1), 8–25.

Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). Technologies for foreign language learning: A review of technology types and their effectiveness. *Computer Assisted Language Learning, 27*(1), 70–105. https://doi.org/10.1080/09588221.2012.700315

Habibi, A., Mukminin, A., Johni, N., Sofwan, M., Haswandy, S., Marzulina, L., Sirozi, M., & Setiawan, A. (2018). Investigating EFL classroom management in Pesantren: A case study. *The Qualitative Report, 23*(9), 2105–2122.

Hidayati, T. (2016). Integrating ICT in English language teaching and learning in Indonesia. *JEELS (Journal of English Education and Linguistics Studies), 3*(1), 38–62. https://doi.org/10.30762/jeels.v3i1.187

Jauregi, K., de Graaff, R., van den Bergh, H., & Kriz, M. (2012). Native/non-native speaker interactions through video-web communication: A clue for enhancing motivation? *Computer Assisted Language Learning, 25*(1), 1–19. https://doi.org/10.1080/09588221.2011.582587

Johnson, K. E. (2006). The sociocultural turn and its challenges for second language teacher education. *TESOL Quarterly*, *40*(1), 235–257. https://doi.org/10.2307/40264518

Karaseva, A., Siibak, A., & Pruulmann-Vengerfeldt, P. (2018). Beyond benefits of technology in foreign language learning: Teachers' pedagogical beliefs concerning the integration of ICT in classroom practices. In M. Tomé (Ed.), *Educational, psychological, and behavioral considerations in niche online communities* (pp. 224–244). IGI Global. https://doi.org/10.4018/978-1-5225-2495-3.ch013

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education, 9*(1), 60–70.

Lawrence, J. E., & Tar, U. A. (2018). Factors that influence teachers' adoption and integration of ICT in teaching/learning process. *Educational Media International, 55*(1), 79–105. https://doi.org/10.1080/09523987.2018.1439712

Levy, M. (2009). Technologies in use for second language learning. *The Modern Language Journal, 93*(s1), 769–782. https://doi.org/10.1111/j.1540-4781.2009.00972.x

Lin, T. J., & Lan, Y. J. (2015). Language learning in virtual reality environments: Past, present, and future. *Educational Technology & Society, 18*(4), 486–497.

Marzuki, A. G., & Nurpahmi, S. (2019). Using social media to enhance students' English speaking ability. *Journal of English Education and Development, 2*(2), 43–48. https://doi.org/10.5281/zenodo.3384885

Ministry of Education and Culture. (2018). *Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 37 of 2018 concerning amendments to the Regulation of the Minister of Education and Culture Number 24 of 2016 concerning core competencies and basic competencies of lessons in the 2013 curriculum for elementary education and secondary education*.

Ministry of Education and Culture. (2022). *Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 7 of 2022 concerning content standards in early childhood education, elementary education, and secondary education*.

O'Dowd, R. (2018). From telecollaboration to virtual exchange: State-of-the-art and the role of UNICollaboration in moving forward. *Journal of Virtual Exchange, 1*, 1–23. https://doi.org/10.14705/rpnet.2018.jve.1

Relmasira, S., Thrupp, R. M., & Hunt, J. (2018). Indonesian teachers' use of the internet for learning. In J. Voogt, G. Knezek, R. Christensen, & K. W. Lai (Eds.), *Second handbook of information technology in primary and secondary education* (pp. 673–690). Springer. https://doi.org/10.1007/978-3-319-71054-9_40

Richards, J. C. (2006). *Communicative language teaching today*. Cambridge University Press.

Silviyanti, T. M., & Yusuf, Y. Q. (2017). EFL teachers' perceptions on using ICT in their teaching: To use or to reject? In M. Nashruddin (Ed.), *The 8th Annual International Conference (AIC) on Social Sciences* (pp. 67–76). Syiah Kuala University Press.

Stockwell, G. (2012). *Computer-assisted language learning: Diversity in research and practice*. Cambridge University Press.

Thomas, M., & Reinders, H. (Eds.). (2010). *Task-based language learning and teaching with technology*. Continuum.

Thorne, S. L., & Reinhardt, J. (2008). "Bridging activities," new media literacies, and advanced foreign language proficiency. *CALICO Journal, 25*(3), 558–572. https://doi.org/10.1558/cj.v25i3.558-572

Tondeur, J., van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development, 65*(3), 555–575. https://doi.org/10.1007/s11423-016-9481-2

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425–478. https://doi.org/10.2307/30036540

Wijayanti, D. M., & Priyatno, A. (2019). The implementation of blended learning model on teachers' technology and pedagogical knowledge. *Journal of English Education and Teaching, 3*(4), 484–497. https://doi.org/10.33369/jeet.3.4.484-497

Yudhiantara, R. A., & Saehu, A. (2017). Mobile-assisted language learning (MALL) in Indonesian Islamic higher education. *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics), 2*(1), 21–31. https://doi.org/10.21093/ijeltal.v2i1.49

Zawacki-Richter, O., Kramer, C., & Buntins, K. (2019). Digital divide in distance education: Results from Germany. In I. Jung (Ed.), *Open and distance education theory revisited* (pp. 173–183). Springer. https://doi.org/10.1007/978-981-13-7740-2_13