



Basic Technology Education as a Foundational Determinant of English Language Learning in EFL Contexts

Muhamad Alfi Khoiruman^{1*}, Doni Hadi Irawan²

^{1,2} Akademi Kelautan Banyuwangi, Indonesia

Email: malfikhoiruman@gmail.com¹, hadie.bwi@gmail.com²

*Corresponding Author:
malfikhoiruman@gmail.com

Abstrak

Integrasi teknologi digital yang semakin pesat dalam pendidikan telah secara fundamental mengubah konteks pembelajaran Bahasa Inggris sebagai Bahasa Asing (*English as a Foreign Language/EFL*). Namun demikian, masih banyak peserta didik yang mengalami kesulitan dalam mengembangkan kemampuan Bahasa Inggris yang memadai. Salah satu faktor penting yang sering kali kurang mendapat perhatian adalah pendidikan teknologi dasar peserta didik, yang berperan dalam membentuk kesiapan mereka untuk berinteraksi dengan lingkungan pembelajaran digital. Penelitian ini bertujuan untuk mengkaji peran pendidikan teknologi dasar sebagai salah satu faktor fundamental dalam pembelajaran Bahasa Inggris pada konteks EFL. Penelitian ini menggunakan desain penelitian deskriptif kualitatif. Data dikumpulkan melalui wawancara mendalam, observasi kelas, dan analisis dokumen yang melibatkan peserta didik dan pengajar EFL dalam lingkungan pendidikan formal. Data dianalisis menggunakan analisis tematik untuk mengidentifikasi pola-pola yang berkaitan dengan kesiapan teknologi, keterlibatan dalam pembelajaran, dan perkembangan kemampuan berbahasa. Hasil penelitian menunjukkan bahwa keterbatasan keterampilan teknologi dasar secara signifikan menghambat akses peserta didik terhadap sumber belajar digital, mengurangi partisipasi dalam aktivitas pembelajaran bahasa yang dimediasi teknologi, serta berdampak negatif terhadap motivasi dan kemandirian belajar. Sebaliknya, peserta didik yang memiliki pendidikan teknologi dasar yang memadai menunjukkan keterlibatan yang lebih tinggi, kepercayaan diri yang lebih besar dalam menggunakan perangkat digital, serta peluang yang lebih baik untuk melakukan praktik Bahasa Inggris secara bermakna. Pembahasan menunjukkan bahwa pendidikan teknologi dasar tidak hanya berfungsi sebagai faktor pendukung, tetapi juga sebagai prasyarat bagi efektivitas pembelajaran EFL di era digital. Penelitian ini menyimpulkan bahwa penguatan pendidikan teknologi dasar sangat penting untuk meningkatkan hasil pembelajaran Bahasa Inggris. Integrasi keterampilan teknologi dasar ke dalam kurikulum pendidikan sejak tahap awal dapat mendorong pembelajaran EFL yang lebih inklusif, efektif, dan berkelanjutan.

Kata Kunci: *pendidikan teknologi dasar; pembelajaran Bahasa Inggris; konteks EFL; literasi digital; teknologi pendidikan.*

Abstract

The rapid integration of digital technology in education has fundamentally transformed English as a Foreign Language (EFL) learning contexts, yet many learners continue to experience difficulties in developing adequate English proficiency. One critical but often overlooked factor is students' basic technology education, which shapes their readiness to engage with digital learning environments. This study aims to examine the role of basic technology education as a foundational determinant of English language learning in EFL contexts. Employing a qualitative descriptive research design, data were collected through in-depth interviews, classroom observations, and document analysis involving EFL students and instructors in a formal educational setting. The data were analyzed using thematic analysis to identify recurring patterns related to technological readiness, learning engagement, and language development. The findings reveal that limited basic technology skills significantly hinder students' access to digital learning resources, reduce participation in technology-mediated language

activities, and negatively affect learning motivation and autonomy. Conversely, students with adequate foundational technology education demonstrate higher engagement, greater confidence in using digital tools, and improved opportunities for meaningful English practice. The discussion highlights that basic technology education functions not merely as a supporting factor but as a prerequisite for effective EFL learning in the digital era. This study concludes that strengthening basic technology education is essential for enhancing English language learning outcomes. Integrating foundational technology skills into early educational curricula can foster more inclusive, effective, and sustainable EFL instruction.

Keywords: basic technology education; English language learning; EFL contexts; digital literacy; educational technology

INTRODUCTION

The rapid expansion of digital technology over the past two decades has fundamentally reshaped educational systems worldwide, including English as a Foreign Language (EFL) learning contexts. The integration of digital platforms, learning management systems (LMS), mobile-assisted language learning applications, artificial intelligence tools, and social media-based resources has significantly transformed how students access and engage with English learning materials (Selwyn, 2022; Redecker & Punie, 2023). In EFL environments, where authentic exposure to English is often limited, digital technology serves as a critical bridge connecting learners to global communication practices, authentic language input, and interactive learning opportunities.

Despite the widespread adoption of educational technology, improvements in English language proficiency among EFL learners have not always been proportional to technological access. Numerous studies report that many students continue to struggle with developing listening, speaking, reading, and writing skills even when digital tools are available (Godwin-Jones, 2022; Lai & Zheng, 2023). This discrepancy suggests that access to technology alone does not guarantee effective language learning. Instead, a more fundamental factor may influence students' ability to benefit from digital learning environments—namely, their level of basic technology education.

Basic technology education refers to foundational competencies in operating digital devices, navigating the internet, utilizing educational platforms, managing digital information, and understanding online safety. These fundamental skills constitute the prerequisite for meaningful participation in technology-enhanced learning environments (Fraillon et al., 2022). Without adequate technological foundations, students may encounter barriers in accessing digital materials, participating in online language activities, and engaging in autonomous learning practices. Within the framework of Technological Pedagogical Content Knowledge (TPACK), effective technology integration depends on the interaction between content knowledge, pedagogical knowledge, and technological knowledge (Mishra, 2019). However, existing research tends to emphasize teachers' technological competence rather than students' foundational technological readiness.

Furthermore, Self-Regulated Learning theory highlights that learners' ability to manage and direct their own learning processes is closely linked to their capacity to utilize digital resources effectively (Panadero, 2022). In EFL contexts, autonomous engagement with online videos, interactive applications, global discussion forums, and digital reading materials requires a certain level of technological literacy. Recent empirical studies indicate that digital literacy positively

correlates with learning engagement and academic achievement (Tang et al., 2023). Nevertheless, limited research has explicitly conceptualized basic technology education as a foundational determinant shaping English language learning outcomes in EFL settings.

The existing research gap lies in the insufficient exploration of how students' basic technology education functions as a structural prerequisite for effective English language learning in the digital era. While many studies focus on technological innovation in pedagogy or digital tool implementation, few examine students' foundational technological competencies as a primary determinant of learning success. This study introduces novelty by positioning basic technology education not merely as a supporting variable but as a foundational determinant that influences access, engagement, motivation, autonomy, and ultimately language proficiency.

Therefore, this study aims to examine the role of basic technology education as a foundational determinant of English language learning in EFL contexts. Specifically, it seeks to: (1) analyze the relationship between basic technology education and student learning engagement, (2) investigate its impact on English language proficiency development, and (3) explain how foundational technological readiness shapes learners' capacity to benefit from digital learning environments. By addressing this gap, the study is expected to contribute theoretically to technology-enhanced EFL research and practically to curriculum development policies that promote inclusive, equitable, and sustainable digital language education.

METODE

This study employed a qualitative descriptive research design to investigate how Basic Technology Education (BTE) functions as a foundational determinant of English language learning in EFL contexts. A qualitative approach was chosen to gain in-depth understanding of learners' technological readiness and its influence on language development within authentic educational settings. Qualitative descriptive research enables researchers to explore participants' lived experiences and interpret contextual meanings systematically (Creswell & Creswell, 2023). This design was considered appropriate because the study seeks to explain patterns of engagement, autonomy, and digital competence rather than to test causal statistical relationships.

The research was conducted in a formal educational institution where English is taught as a foreign language and digital platforms are integrated into classroom instruction. The primary data sources consisted of EFL students and English instructors selected through purposive sampling to ensure participants had experience with technology-mediated learning. Secondary data were obtained from institutional documents, lesson plans, and digital learning records. Purposeful sampling allows researchers to select information-rich cases that illuminate the phenomenon under investigation (Patton, 2022). This strategy ensured that participants possessed sufficient exposure to both English instruction and digital learning environments.

Data were collected through three techniques: in-depth semi-structured interviews, non-participant classroom observations, and document analysis. Interviews explored participants' perceptions of basic technology skills, digital literacy, and English learning experiences.

Observations focused on students' interaction with digital tools and participation in technology-based tasks, while document analysis examined LMS logs and instructional materials. Multiple data collection techniques were employed to ensure triangulation and enhance research credibility (Braun & Clarke, 2022). Each interview lasted approximately 30–45 minutes and was audio-recorded with participants' consent.

The study examined two main analytical dimensions: Basic Technology Education and English Language Learning. Indicators of Basic Technology Education included device operation skills, internet navigation competence, platform utilization, digital communication ability, and online safety awareness. English learning indicators included learning engagement, participation in digital activities, frequency of English practice, and autonomous learning behavior. The use of clearly defined indicators enhances analytical transparency and allows systematic categorization of qualitative data (Miles, Huberman, & Saldaña, 2023). These indicators guided both the development of interview protocols and the construction of observation checklists.

The data were analyzed using thematic analysis to identify recurring patterns related to technological readiness, engagement, and language development. The analysis followed six stages: data familiarization, coding, theme generation, theme review, theme definition, and reporting. Thematic analysis provides a flexible yet rigorous framework for identifying meaningful patterns across qualitative datasets (Braun & Clarke, 2022). Coding was conducted manually by organizing transcripts into conceptual categories aligned with the study's research objectives.

The analytical procedure began with verbatim transcription of interview data, followed by open coding to identify significant statements. Codes were then grouped into broader thematic categories representing relationships between foundational technology skills and English learning outcomes. Triangulation across interviews, observations, and documents was conducted to strengthen interpretative validity. To ensure trustworthiness, the study applied member checking and peer debriefing strategies, which are recommended to enhance credibility and dependability in qualitative research (Lincoln & Guba, 2021). These procedures ensured that the findings accurately reflected participants' perspectives and minimized researcher bias.

RESULTS AND DISCUSSION

Students' Basic Technology Education Levels

To identify students' foundational technological readiness, participants were categorized into three levels based on predefined indicators: device operation, internet navigation, LMS usage, digital communication skills, and online safety awareness.

Table 1. Students' Basic Technology Education Levels

No	Student Code	Technology Score	Category
1	ST01	45	Low

2	ST02	68	Moderate
3	ST03	88	High
4	ST04	72	Moderate
5	ST05	91	High
...	...	...	...

Based on Table 1, it can be observed that students demonstrate varied levels of basic technology competence. Approximately one-third of participants fall into the moderate category, while a smaller proportion remain in the low category. Students categorized as “High” showed consistent ability in operating digital tools independently and accessing English learning resources without assistance.

2. English Learning Outcomes Across Technology Levels

To examine the relationship between technological readiness and English proficiency, students’ learning performance was analyzed.

Table 2. English Learning Outcomes by Technology Category

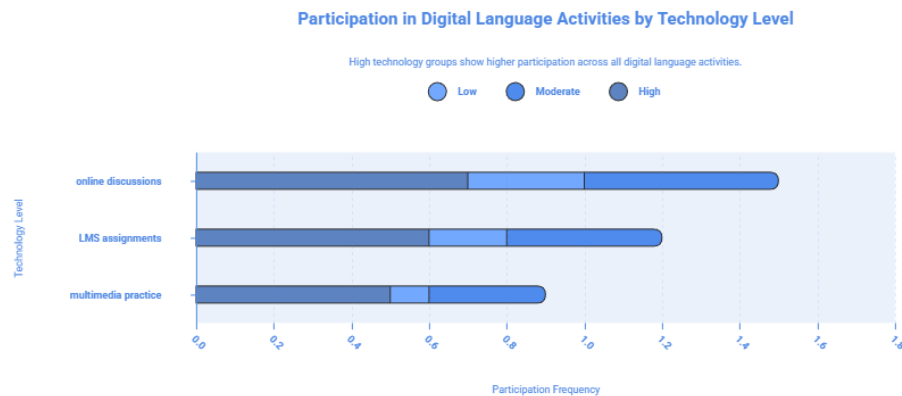
Technology Category	Average English Score	Learning Engagement Level
Low	58	Limited
Moderate	72	Moderate
High	85	High

Based on Table 2, students with high foundational technology education achieved higher average English scores (85) compared to those in the low category (58). Additionally, engagement levels increased proportionally with technology competence. This indicates a positive association between technological readiness and English language achievement.

3. Classroom Observation Findings

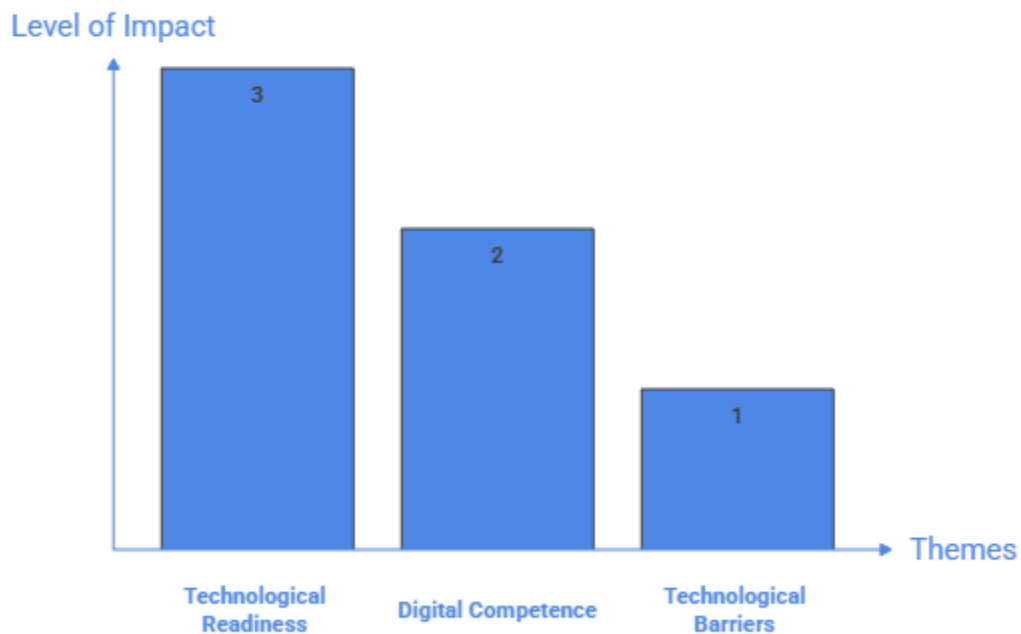
Classroom observations further revealed behavioral differences in technology-mediated activities.

Figure 1. Participation in Digital Language Activities by Technology Level



As illustrated in Figure 1, students in the high-technology category participated more actively in online discussions, multimedia-based listening tasks, and digital assignments. Conversely, students with low foundational technology skills frequently required technical assistance and demonstrated reduced participation in interactive English tasks.

Figure 2. Impact of Technological Skills on English Learning



The figure titled “Impact of Technological Skills on English Learning” presents a bar chart illustrating three thematic dimensions and their respective levels of impact. The vertical axis represents the Level of Impact, while the horizontal axis categorizes the themes into Technological

Readiness, Digital Competence, and Technological Barriers. Among the three themes, Technological Readiness shows the highest level of impact (3), indicating that foundational technological skills play the most significant role in supporting English learning. Digital Competence ranks second (2), suggesting a moderate but meaningful contribution to language development. In contrast, Technological Barriers display the lowest impact level (1), highlighting that while obstacles exist, their influence is comparatively less dominant than readiness and competence factors. Overall, the figure emphasizes that stronger technological foundations and digital competence positively shape English learning outcomes in EFL contexts.

Discussion

The findings of this study demonstrate that Basic Technology Education (BTE) plays a substantial role in shaping English language learning outcomes in EFL contexts. Students who possess strong foundational technological skills tend to show higher levels of classroom engagement, greater learning autonomy, and more consistent improvement in language proficiency. These findings suggest that technological readiness functions as a structural prerequisite for meaningful participation in digitally mediated English learning environments. In contemporary educational settings where digital tools are embedded into instructional practices, students' foundational technology competence determines the extent to which they can benefit from interactive platforms, multimedia resources, and global communication opportunities (Redecker & Punie, 2023).

The results also align with the principles of Self-Regulated Learning (SRL), which emphasize learners' capacity to plan, monitor, and evaluate their own learning processes. Students with higher levels of technological readiness were more proactive in accessing online English materials, practicing independently, and utilizing feedback mechanisms available in digital platforms. This reflects the theoretical position that digital competence strengthens self-regulation by enabling learners to control learning pace and resource selection more effectively (Panadero, 2022). Therefore, foundational technology education indirectly enhances English proficiency by fostering autonomous learning behaviors.

Moreover, the findings are consistent with the Technological Pedagogical Content Knowledge (TPACK) framework, which underscores the integration of technological knowledge with pedagogical and content knowledge to achieve effective instruction. While much of the existing literature emphasizes teachers' technological integration skills, this study shifts the focus toward students' foundational technological competence as a decisive element in the learning equation. Without sufficient technological literacy on the learners' side, the pedagogical potential of digital tools may remain underutilized (Mishra, 2019). This reinforces the argument that effective digital learning ecosystems require reciprocal technological readiness from both educators and students.

Importantly, this study contributes theoretical novelty by positioning Basic Technology Education not merely as a supportive variable but as a foundational determinant of English language learning success. Previous studies have generally treated digital literacy as a

complementary factor; however, the present findings suggest that it functions as an enabling infrastructure for engagement, access, and skill development. In other words, technological competence operates at the foundational level of the learning process, influencing motivation, participation, and performance outcomes simultaneously (Tang, Chaw, & Chen, 2023). This conceptual repositioning advances current discussions in technology-enhanced EFL research.

From a practical standpoint, the findings imply that integrating structured basic technology training into early stages of education can promote digital equity and optimize English learning effectiveness. Educational institutions should avoid assuming that students automatically possess adequate digital skills due to generational exposure to technology. Research indicates that being a “digital native” does not necessarily equate to possessing academic digital literacy or strategic technological competence (Selwyn, 2022). Therefore, curriculum designers and policymakers should systematically incorporate foundational digital skills training to ensure inclusive participation in technology-enhanced EFL instruction.

In conclusion, the results confirm that Basic Technology Education significantly influences students’ access to learning resources, engagement in digital activities, and overall English language development in EFL contexts. Strengthening foundational technological competence is essential for fostering sustainable, equitable, and effective English language education in the digital era. By addressing technological readiness at the foundational level, institutions can ensure that digital innovation translates into measurable improvements in language learning outcomes (Godwin-Jones, 2022; Irawan, et al., 2025).

CONCLUSION

This study aimed to examine the role of Basic Technology Education (BTE) as a foundational determinant of English language learning in EFL contexts. The findings clearly demonstrate that foundational technological competence significantly influences students’ engagement, autonomy, and overall English proficiency. Students who possess adequate basic technology skills are better able to access digital learning resources, actively participate in technology-mediated language activities, and independently regulate their learning processes. These results confirm that technological readiness is not merely a complementary factor but a prerequisite for effective participation in digital EFL environments. By positioning Basic Technology Education as a foundational determinant, this study provides empirical and theoretical evidence that strengthening students’ technological competence is essential for achieving meaningful and sustainable English language learning outcomes in the digital era.

Based on the findings and discussion, several recommendations are proposed. First, curriculum developers and educational policymakers should integrate structured basic technology training into early stages of formal education to ensure equitable digital readiness among learners. Second, educational institutions should implement systematic assessments of students’ technological competence before introducing advanced digital learning platforms in EFL instruction. Third, teachers and practitioners are encouraged to design instructional strategies that simultaneously develop language skills and foundational technological competencies. For future

research, scholars are recommended to examine this phenomenon using quantitative or mixed-method approaches to measure causal relationships between technological readiness and English achievement more precisely. Additionally, longitudinal studies may provide deeper insights into how foundational technology education shapes long-term language development across different educational levels.

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