



Department of Digital Business

Journal of Artificial Intelligence and Digital Business (RIGGS)

Homepage: <https://journal.ilmudata.co.id/index.php/RIGGS>

Vol. 4 No. 4 (2026) pp: 8374-8382

P-ISSN: 2963-9298, e-ISSN: 2963-914X

English Language Acquisition Through Technology-Based Learning: A Review Of Motivation, Learner Autonomy, And Self-Efficacy Of Senior High School Students

Dharmawati Ambarita¹, Dian Susyla²

Master's Program in Pedagogy, Universitas Muhammadiyah Bengkulu

dharmambarita@gmail.com¹, diansusyla@umb.ac.id²

Abstract

This study presents a literature-based review of Indonesian journal articles and academic books published within the last five years that examine English language acquisition through technology-based learning, with particular emphasis on motivation, learner autonomy, and self-efficacy among senior high school students. The review is grounded in the increasing integration of digital technologies in English language teaching in Indonesia, driven by national education policies and the demands of globalization. Although numerous studies have explored technology-enhanced English learning, existing research in the Indonesian EFL context largely examines psychological variables in isolation, resulting in fragmented theoretical and pedagogical insights. Using a library research approach, this study systematically analyzes peer-reviewed journals, scholarly books, and policy documents through content analysis techniques. The findings indicate that technology-based learning can effectively support English language acquisition when accompanied by strong learner motivation, well-developed autonomy, and positive self-efficacy beliefs. These three factors are shown to interact dynamically, shaping students' engagement, persistence, and ability to utilize digital learning affordances meaningfully. However, the review also reveals persistent challenges, including teacher-centered instructional practices, uneven development of learner autonomy, and limited pedagogical scaffolding in digital environments. This study concludes that technology integration alone is insufficient to enhance English proficiency without deliberate attention to learners' psychological readiness. The synthesis contributes theoretically by reinforcing socio-cognitive and constructivist perspectives on language learning and practically by offering insights for teachers, curriculum developers, and policymakers to design learner-centered, psychologically informed, and sustainable technology-enhanced English learning environments in Indonesian senior high schools.

Keywords: Technology-Based Learning, Motivation, Learner Autonomy, Self-Efficacy, English Language Acquisition

1. Introduction

This study aims to review Indonesian journal articles and books published within the last five years that examine English language acquisition through technology-based learning, with a particular focus on three interrelated psychological factors: motivation, learner autonomy, and self-efficacy among senior high school students. This comprehensive synthesis is considered necessary because, although technology integration in English language teaching has expanded rapidly in Indonesia, existing empirical and conceptual studies in the Indonesian EFL context tend to investigate these psychological variables in isolation. Such fragmented approaches may limit a holistic understanding of how motivation, learner autonomy, and self-efficacy interact to influence learners' engagement, persistence, and overall language development within technology-enhanced learning environments.

English language acquisition in Indonesian senior high schools has increasingly become a strategic educational priority. English is no longer viewed merely as a compulsory foreign language subject but is positioned as a critical competency for academic success, global communication, and workforce readiness. In the context of globalization, international academic mobility, and transnational labor markets, English proficiency enables Indonesian students to access scientific literature, participate in intercultural communication, and compete in higher education and professional domains (Sukardi & Nugroho, 2021; Suryani, 2022). Consequently, improving

the quality and effectiveness of English language instruction at the secondary school level has become a major concern for educators, school administrators, and policymakers.

Within the Indonesian EFL context, students' success in acquiring English is shaped by a complex interaction between instructional practices, learning environments, and learner-related psychological characteristics. For decades, English instruction in many Indonesian senior high schools has been dominated by teacher-centered approaches that emphasize grammatical accuracy, rote memorization, and textbook-based exercises. While such approaches may support limited aspects of linguistic knowledge, they often restrict students' opportunities to actively use English in meaningful communicative contexts, thereby constraining the development of communicative competence and learner agency. In response to these limitations, national education policies have increasingly emphasized digital transformation and the integration of technology into teaching and learning processes (Kemendikbud, 2020). As a result, technology-based learning has emerged as a promising approach to enhance instructional relevance, flexibility, and learner engagement in English education (Pratama & Hidayat, 2023).

This study utilizes three major theoretical frameworks to explain the interrelationships among motivation, learner autonomy, and self-efficacy in English language acquisition through technology-based learning. First, Self-Determination Theory (SDT), developed by Ryan and Deci (2000), emphasizes that sustained motivation depends on the fulfillment of three basic psychological needs: autonomy, competence, and relatedness. In the context of technology-mediated language learning, various applications and digital platforms provide choices of activities, difficulty levels, and feedback that support learners' sense of competence, thereby potentially enhancing intrinsic motivation and learner autonomy.

Second, Bandura's Social Cognitive Theory positions self-efficacy as a key factor influencing how learners perceive tasks, set goals, and persist in the face of challenges (Bandura, 1991). Technology-enhanced learning environments offer multiple opportunities for observational learning through videos, online models, and learning communities, while simultaneously providing repeated practice and feedback that can strengthen learners' self-efficacy in using English.

Third, Sociocultural Theory, rooted in Vygotsky's ideas, views language acquisition as a socially mediated process shaped by cultural tools, including digital technology (Vygotsky, 1978; Lantolf & Thorne, 2006). The concept of the Zone of Proximal Development (ZPD) explains how scaffolding from teachers, peers, and digital media helps learners move from dependence toward autonomy. In the Indonesian EFL context, online discussion forums, collaborative activities in learning management systems, and project-based technology tasks can simultaneously foster motivation, autonomy, and self-efficacy.

By integrating SDT (Ryan & Deci, 2000), Social Cognitive Theory (Bandura, 1991), and Sociocultural Theory (Vygotsky; Lantolf & Thorne, 2006), this study aims to construct a comprehensive theoretical foundation for understanding how motivation, learner autonomy, and self-efficacy interact in technology-based English learning environments in Indonesian senior high schools. This integrated perspective provides a nuanced lens to investigate psychological factors that collectively influence students' engagement, persistence, and overall language development, addressing a critical gap in existing research where these constructs are often examined in isolation.

Technology-based learning in English language education encompasses the use of digital platforms, learning management systems, mobile-assisted language learning applications, online multimedia resources, and interactive communication tools to support language learning both inside and outside the classroom. Recent Indonesian studies indicate that technology-enhanced learning environments provide students with wider exposure to authentic language input, opportunities for repeated practice, and access to diverse learning resources that may not be available in conventional classrooms (Drajati et al., 2021; Wulandari & Cahyono, 2022). These affordances are particularly relevant for senior high school students, who are expected to develop higher-order thinking skills, self-regulation, and greater responsibility for their own learning as part of their preparation for higher education and lifelong learning.

However, the effectiveness of technology-based English learning does not solely depend on the availability or sophistication of digital tools. Learners' affective and psychological readiness plays a crucial role in determining

how technology is perceived, utilized, and internalized in the learning process. Among various learner-related factors, motivation has consistently been identified as one of the most influential determinants of English language acquisition. Motivation affects learners' willingness to invest effort, persist in challenging tasks, and actively engage in learning activities. Indonesian EFL research demonstrates that students with higher levels of motivation tend to show stronger engagement, better learning outcomes, and greater perseverance in learning English (Rahmawati & Fitriani, 2021; Astutik et al., 2024). Technology-based learning environments are believed to enhance motivation by offering interactive content, multimedia materials, gamified learning activities, and immediate feedback, which can reduce boredom and anxiety often associated with traditional classroom instruction (Novianti, 2024; Tazkia, 2025).

In addition to motivation, learner autonomy has emerged as a central concept in contemporary language education, particularly in technology-mediated learning contexts. Learner autonomy refers to learners' capacity to take responsibility for planning, monitoring, and evaluating their own learning processes. Autonomous learners are more likely to engage in self-directed learning, seek additional learning resources, and reflect on their learning strategies. Indonesian studies published within the last five years suggest that technology-based learning environments can foster learner autonomy by allowing students to control learning pace, select learning materials that match their needs, and practice English independently beyond classroom constraints (Putri, Hadriana, & Eliwarti, 2023; Warni, Aziz, & Febriawan, 2025). Nevertheless, the development of learner autonomy among senior high school students remains uneven, as many learners still depend heavily on teacher guidance and structured instruction, indicating the need for pedagogical scaffolding to support autonomous learning.

Self-efficacy is another critical psychological construct that significantly influences English language acquisition. Self-efficacy refers to learners' beliefs in their ability to successfully perform specific language learning tasks, such as speaking, reading, or writing in English. Studies in Indonesian EFL contexts reveal that students with high self-efficacy demonstrate greater confidence, employ more effective learning strategies, and show stronger resilience when encountering linguistic difficulties (Supardi & Triansyah, 2025; Istikharoh & Utami, 2024). Technology-based learning environments have the potential to enhance learners' self-efficacy by providing repeated practice opportunities, personalized and adaptive feedback, and low-anxiety learning spaces where students can experiment with language use without fear of negative evaluation (Lee & Drajadi, 2019; Hung, 2021).

Despite the growing body of Indonesian research on technology-based English learning, many existing studies focus on motivation, learner autonomy, or self-efficacy as separate constructs. Limited attention has been given to synthesizing these three factors simultaneously, particularly within the context of senior high school students. This represents a critical research gap, as motivation, learner autonomy, and self-efficacy are theoretically interconnected and mutually reinforcing in shaping learners' engagement and success in language learning. A fragmented understanding of these factors may hinder the development of comprehensive pedagogical strategies that fully leverage the potential of technology-based learning.

Therefore, a systematic review of Indonesian scholarly works published within the last five years is necessary to integrate existing findings and provide a clearer picture of how motivation, learner autonomy, and self-efficacy collectively contribute to English language acquisition through technology-based learning. By synthesizing evidence from journals and books, this study seeks to offer theoretical insights and pedagogical implications for English teachers, curriculum developers, and educational policymakers in Indonesia. Such insights are expected to support the design of learner-centered, psychologically informed, and technology-enhanced English learning environments that promote sustainable language development and better prepare senior high school students for future academic and professional challenges.

2. Research Methods

This study employs a library research approach. This approach was selected based on the research objective, which focuses on an in-depth analytical review of concepts, theoretical frameworks, empirical findings, and assessment perspectives related to English language acquisition through technology-based learning, with particular attention to three psychological factors: motivation, learner autonomy, and self-efficacy among senior high school students. Consistent with this aim, the study is theoretically guided by Self-Determination Theory (Deci & Ryan, 2000), Social Cognitive Theory (Bandura, 1991, 1997), and Sociocultural Theory (Vygotsky, 1978; Lantolf &

Thorne, 2006), which collectively provide a lens for understanding how these psychological factors operate in technology-mediated English language learning. The library research design allows for a comprehensive examination of both theoretical arguments and empirical evidence regarding the psychological and pedagogical dimensions of technology-based English learning within the Indonesian EFL context.

Library research enables a critical synthesis of existing knowledge, identification of conceptual patterns, and evaluation of the consistency of empirical findings across studies. In this study, the approach facilitates a systematic interpretation of how motivation, learner autonomy, and self-efficacy are conceptualized, measured, and developed through technology-based learning environments, particularly when analyzed through the three aforementioned theoretical frameworks. Self-Determination Theory serves as a basis for classifying studies that emphasize basic psychological needs (autonomy, competence, and relatedness) in online learning; Social Cognitive Theory is used to analyze self-efficacy, observational learning, and technology-mediated self-regulation; while Sociocultural Theory explains the role of interaction, mediation, and the Zone of Proximal Development (ZPD) in online and blended learning environments. Moreover, this approach supports critical analysis of learning models, digital teaching strategies, and assessment frameworks that influence students' English language acquisition, thereby providing a holistic understanding of the operation of psychological factors at the secondary education level.

The study's data consist of secondary sources obtained from credible academic literature and official documents. These sources include peer-reviewed national and international journals focusing on English language teaching and learning, books on applied linguistics, educational psychology, and technology-enhanced language learning, as well as scholarly articles addressing motivation, learner autonomy, and self-efficacy in the EFL context. Particular attention was given to works explicitly referencing Self-Determination Theory, Social Cognitive Theory, or Sociocultural Theory to ensure empirical analyses align with the study's theoretical orientation. Additionally, policy documents and curriculum guidelines issued by the Indonesian Ministry of Education, such as the Kurikulum Merdeka and national digital learning frameworks, were reviewed to contextualize technology-based English learning at the senior high school level. Reports from international organizations related to language education and digital learning were also utilized to strengthen the study's analytical foundation.

Data collection was conducted through documentation techniques, including systematic searching, selection, and organization of relevant written sources. The collected literature was then categorized into main analytical themes, including second language acquisition theories, motivational theories in EFL learning, learner autonomy in digital environments, self-efficacy in language learning, and technology-based English learning models. Within these categories, Self-Determination Theory was applied to code studies based on discussions of intrinsic–extrinsic motivation and fulfillment of psychological needs; Social Cognitive Theory guided the identification of self-efficacy indicators, modeling-based learning, and self-regulated learning behaviors; whereas Sociocultural Theory formed the basis for categorizing patterns of interaction, scaffolding practices, and technology-mediated collaboration. The study focused on literature published within the last five years to ensure relevance and novelty.

The unit of analysis in this research is not individual students or classes, but rather the concepts, theories, learning models, and empirical findings related to English language acquisition through technology-based learning. The analysis examines how motivation, learner autonomy, and self-efficacy are described and operationalized in existing studies, how these three variables influence student engagement and learning outcomes, and which pedagogical conditions support or hinder their development in technology-mediated English learning environments. The three theoretical frameworks serve as interpretive tools to assess the extent to which the studies reflect constructs such as autonomy and competence (SDT), self-efficacy and reciprocal determinism (Social Cognitive Theory), and mediation and ZPD (Sociocultural Theory).

Data analysis was conducted using content analysis techniques, encompassing careful reading, interpretation, and thematic coding of the selected literature to identify recurring patterns, inter-concept relationships, and theoretical convergence. Analytical stages included data reduction through selection of the most relevant information, data categorization by grouping findings into key themes (motivation, learner autonomy, self-efficacy, and technology-based learning practices), and interpretation by synthesizing theoretical and empirical insights into an integrated conceptual understanding. During coding, SDT was used to interpret how technology-based activities fulfill or fail to fulfill students' psychological needs; Social Cognitive Theory guided

the examination of how digital tools provide modeling opportunities, feedback, and mastery experiences that shape self-efficacy; while Sociocultural Theory directed the analysis of collaborative tasks, interaction patterns, and scaffolding facilitated by technology-based learning environments. This analytical process allowed for the construction of a coherent narrative regarding the role of psychological factors in technology-based English language acquisition.

To ensure data validity and academic rigor, source triangulation was conducted by comparing information from diverse types of literature, including empirical research articles, theoretical books, curriculum documents, and policy reports. Cross-verification was also performed between classical theories of motivation, autonomy, and self-efficacy—including SDT, Social Cognitive Theory, and Sociocultural Theory—and contemporary EFL studies in technology-based learning contexts. This triangulation process aimed to minimize interpretive bias and ensure that the analysis reflects both a strong theoretical foundation and the latest developments in English language education.

Overall, this methodological design aims to produce a comprehensive and theory-based understanding of English language acquisition through technology-based learning among senior high school students. By synthesizing credible literature within the frameworks of Self-Determination Theory, Social Cognitive Theory, and Sociocultural Theory, the study seeks to identify dominant themes, emerging challenges, and effective pedagogical strategies related to motivation, learner autonomy, and self-efficacy. The findings are expected to provide meaningful contributions for English teachers, curriculum developers, and educational policymakers in designing more effective, learner-centered, and psychologically informed technology-based English learning environments, in line with the objectives of the Kurikulum Merdeka and 21st-century education demands.

3. Results and Discussions

The findings of this literature review indicate that English language acquisition through technology-based learning among senior high school students is strongly influenced by the dynamic interaction between motivation, learner autonomy, and self-efficacy. Recent Indonesian empirical studies consistently emphasize that these three psychological constructs serve as foundational determinants of student engagement, persistence, and learning success in digital English learning environments (Sari & Wahyuni, 2021; Putri, 2022; Rahmawati et al., 2023). In line with Self-Determination Theory (Deci & Ryan, 2000), these findings suggest that technology is most effective when it supports students' psychological needs for autonomy and competence, rather than merely serving as a medium for content delivery. Research within the Indonesian EFL context also indicates that technology integration does not automatically enhance language acquisition; its effectiveness is mediated by students' internal psychological conditions, consistent with social-cognitive perspectives that highlight the role of self-regulation and self-efficacy in learning (Bandura, 1991, 1997). Students with strong motivation, autonomous learning tendencies, and positive self-beliefs are better able to transform the "potential" of technology into meaningful language learning experiences (Sari et al., 2022).

Motivation emerges as the most frequently studied variable in Indonesian research on technology-based English learning. Hidayat and Pratama (2020) and Lestari (2021) demonstrate that digital learning environments enriched with multimedia elements such as videos, interactive quizzes, and gamified tasks can enhance students' intrinsic motivation to learn English. From the perspective of Self-Determination Theory, these findings suggest that technology-based tasks help satisfy students' needs for autonomy (freedom to choose activities) and competence (clear feedback), thereby fostering more internally driven motivation (Deci & Ryan, 2000; Ushioda, 2011). Technology-mediated learning has also been reported to reduce anxiety and boredom often associated with grammar-focused traditional classrooms, aligning with Krashen's notion that low-anxiety environments support comprehensible input. Putri (2022) found that motivated students participate more actively in online forums and are more willing to engage in independent English practice via mobile applications. However, Nugroho and Hafifah (2022) caution that motivational gains are highly dependent on pedagogical design; when technology is used merely as a substitute for textbooks or lectures, student motivation tends to stagnate. This underscores the importance of pedagogical innovation and autonomy-supportive teaching, rather than mere digital device use.

Beyond motivation, learner autonomy is identified as both an outcome and a prerequisite for successful technology-based English learning. Indonesian studies indicate that digital platforms facilitate autonomy by allowing students to regulate learning pace, select resources according to their needs, and practice independently

beyond classroom constraints (Susanti & Rahayu, 2020; Wulandari, 2023). From a Sociocultural Theory perspective, these digital tools serve as mediating artifacts enabling students to operate within their Zone of Proximal Development (ZPD) through interactions with learning resources, teachers, and peers (Vygotsky, 1978; Lantolf & Thorne, 2006). Kurniawan et al. (2021) found that sustained exposure to technology-enhanced learning environments promotes metacognitive awareness, enabling students to better plan and monitor their own learning. Nevertheless, several studies highlight challenges in fostering autonomy. Many high school students accustomed to teacher-centered learning struggle to transition to a more independent role, especially in the absence of explicit guidance and scaffolding (Rahman & Dewi, 2022). This indicates that autonomy does not automatically emerge from technology use alone but must be gradually developed through pedagogical support.

Self-efficacy is another crucial factor consistently highlighted in the Indonesian EFL literature. Research by Amelia and Saputra (2021) and Fitriani and Adnan (2022) shows that students with high English self-efficacy are more confident in using digital tools, willing to attempt challenging language tasks, and persist despite difficulties. These findings align with Social Cognitive Theory, which posits that self-efficacy develops through mastery experiences, observational learning, and feedback in specific contexts (Bandura, 1991, 1997). Students repeatedly succeeding in technology-based tasks with timely feedback tend to view technology as an enabling resource rather than a threat. Yuliana (2023) reports that repeated exposure to digital tasks, accompanied by immediate feedback, strengthens students' beliefs in their ability to complete English language assignments. Conversely, students with low self-efficacy tend to avoid interactive digital activities, rely heavily on teacher assistance, and become easily frustrated when facing technical or linguistic challenges, thereby underutilizing the potential of technology.

A significant contribution of recent Indonesian research is the recognition of the interrelatedness of motivation, learner autonomy, and self-efficacy. Rahman and Dewi (2022) and Sutrisno et al. (2023) demonstrate that these variables do not operate in isolation but form reciprocal relationships that influence students' learning trajectories. Bandura's Social Cognitive Theory helps explain these interconnections: self-efficacy shaped by feedback and modeling mediated through technology affects motivation and readiness for autonomous practice, while success in independent learning, in turn, reinforces self-efficacy and intrinsic motivation. Motivation serves as the initial driver for engaging in digital tasks; learner autonomy sustains engagement through self-regulation and independent practice; and self-efficacy strengthens students' willingness to take linguistic risks. When one component is weak, the overall effectiveness of technology-based learning declines, even with adequate digital infrastructure.

The discussion of these findings indicates that pedagogical practice is a critical determinant of whether technology integration genuinely enhances English language acquisition. Some Indonesian studies highlight that teacher-centered pedagogy limits opportunities for students to develop autonomy and self-efficacy, even in technology-equipped classrooms (Hendriani & Muslim, 2020; Prasetyo, 2021). When teachers dominate classroom discourse and use technology primarily for content delivery, students remain passive recipients of information. This pattern contrasts with interactionist views in SLA, which emphasize the importance of negotiated interaction for language acquisition (Long, 1996). Conversely, student-centered approaches—emphasizing collaboration, problem-solving, and reflection, mediated through digital tools—have been shown to enhance both motivation and self-confidence (Sulastrri et al., 2022). From a sociocultural perspective, such practices provide rich scaffolding opportunities within the ZPD, supporting the internalization of autonomous and self-regulated learning behaviors.

From a broader policy perspective, the literature emphasizes that digital transformation initiatives in Indonesian education must be accompanied by sustained teacher professional development. The Directorate of GTK (2021) and Mulyadi (2023) report that teachers require not only technical competencies but also pedagogical knowledge on designing learning aligned with the principles of SDT, Social Cognitive Theory, and Sociocultural Theory. Without such support, technology integration risks reinforcing traditional teaching patterns rather than transforming learning practices. Overall, this review underscores that English language acquisition through technology-based learning among senior high school students is a complex, multidimensional process. Motivation, learner autonomy, and self-efficacy consistently emerge as key mediating variables determining the extent to which students can capitalize on digital learning environments. The successful integration of technology requires a balance of technological innovation, theory-informed pedagogical design, and psychological support for learners.

Research Gaps

Despite growing research on technology-based English learning in Indonesia, several critical gaps remain. First, most empirical studies in high school contexts examine motivation, learner autonomy, and self-efficacy as separate variables. While these studies provide insights into the contribution of each factor, they rarely explore their interaction within an integrated theoretical framework, such as SDT, Social Cognitive Theory, or Sociocultural Theory. This separation limits holistic understanding of how psychological readiness mediates the effectiveness of technology-based learning, repeating the early SLA research limitation of focusing on single variables or surface behaviors.

Second, many Indonesian EFL studies emphasize short-term outcomes such as test score improvement or class participation, while long-term developmental processes are less explored. Few studies track how motivation, autonomy, and self-efficacy evolve over sustained exposure to technology-based learning and how these dynamics can be interpreted through SDT (psychological needs fulfillment over time), Social Cognitive Theory (reinforcement of self-regulation and efficacy), or Sociocultural Theory (students' shifting positions within the ZPD).

Third, although national policy emphasizes digital transformation, many studies do not sufficiently contextualize their findings within actual classroom realities. Teacher-centered practices have been acknowledged (Hendriani & Muslim, 2020; Prasetyo, 2021), yet analyses of how instructional design, teacher facilitation, and scaffolding mediate the relationship between technology use and students' psychological development remain limited. Consequently, few studies link digital policy initiatives, classroom practice, and students' psychological outcomes in an integrated manner.

Fourth, studies specifically focusing on senior high school students are less numerous compared to those on university students. Given the greater variability in psychological profiles and readiness for autonomous learning among high school students, this limitation leaves gaps in understanding how technology-based learning can be effectively adapted for adolescents still developing self-regulation and language confidence.

Hence, there is a need for theory-driven research that explicitly integrates motivation, learner autonomy, and self-efficacy as interrelated constructs in technology-based English learning at the senior high school level, systematically referring to SDT, Social Cognitive Theory, and Sociocultural Theory.

Theoretical Implications

The findings of this review have several important theoretical implications for English language education and educational psychology in technology-based learning contexts. First, the results reinforce the relevance of socio-cognitive, Self-Determination, and Sociocultural theories, which emphasize the role of internal psychological factors and social mediation in shaping learning outcomes. The consistent interdependence among motivation, autonomy, and self-efficacy supports theoretical models that conceptualize language acquisition as an active, self-regulated, socially networked process rather than passive linguistic input reception.

Second, this synthesis enriches the application of Social Cognitive Theory in technology-mediated language learning by demonstrating how digital tools provide conditions for mastery experiences, modeling, and feedback that shape self-efficacy. This highlights the need for technology-based learning models that explicitly position self-efficacy as a core mediating construct.

Third, from a Sociocultural Theory perspective, the findings suggest that technology functions as a mediating artifact that can extend students' ZPD through collaborative tasks, online interaction, and scaffolding from teachers and peers. However, without deliberate instructional design guiding the use of such mediation, the potential of technology remains underutilized. Autonomy and self-regulation should therefore be understood as outcomes of guided participation rather than automatic consequences of digital access.

Overall, this review emphasizes the need for an integrated theoretical framework combining SDT, Social Cognitive Theory, and Sociocultural Theory to understand technology-based language learning in Indonesia, while

also providing a critical lens to consider how cultural and local contexts shape the manifestation of these theories in classrooms.

Practical Implications

In practice, the findings have important implications for English teachers, school leaders, and educational policymakers. For teachers, the review suggests that technology-based English learning should move beyond mere device usage toward theory-informed pedagogy. Teachers are encouraged to design activities that not only utilize technology but also intentionally foster motivation, autonomy, and self-efficacy—for instance, by providing task choices, scaffolded difficulty levels, formative feedback to build competence, and opportunities for reflection and self-assessment.

For curriculum developers, the findings highlight the importance of embedding learner-centered principles and sociocultural mediation into technology-based English curricula. The curriculum should provide gradual pathways for developing autonomous learning skills, especially at the senior high school level, through collaborative tasks, technology-based projects, and activities that promote interaction and online co-construction of knowledge.

At the institutional and policy level, the review underscores the need for comprehensive teacher professional development programs. Training should address not only technical skills but also pedagogical design aligned with SDT, Social Cognitive Theory, and Sociocultural Theory—for example, how teachers can provide effective scaffolding in digital learning spaces to establish a productive ZPD for students.

Conclusion

This literature review indicates that English language acquisition through technology-based learning among Indonesian senior high school students is a multidimensional process shaped by the reciprocal interaction of motivation, learner autonomy, and self-efficacy. Framed through Self-Determination Theory, Social Cognitive Theory, and Sociocultural Theory, technology is conceptualized as an enabling medium rather than a determining factor; its effectiveness is largely contingent upon students' psychological readiness, opportunities for social mediation, and pedagogical design. Motivation serves as the initial driver for engagement in digital tasks, learner autonomy sustains engagement through self-regulation and independent practice, while self-efficacy reinforces perseverance and the willingness to take linguistic risks. When any of these three factors are weak, the benefits of technology integration remain limited, even when digital infrastructure is adequate. Persistent challenges include teacher-centered instructional dominance, insufficient scaffolding for learner autonomy, and uneven development of students' confidence in using English via digital platforms. These findings underscore that successful technology-based English learning requires a holistic approach that integrates digital tools, theory-informed learner-centered pedagogy, and systematic psychological support. By aligning digital innovations with the principles of SDT, Social Cognitive Theory, and Sociocultural Theory, teachers, curriculum developers, and policymakers can create more meaningful, sustainable, and inclusive English learning experiences for Indonesian senior high school students.

Referensi

- 1 Amelia, R., & Saputra, D. (2021). Self-efficacy and students' engagement in technology-based English learning. *Journal of English Education Studies*, 4(2), 115–127.
- 2 Astutik, S., Rahman, A., & Lestari, D. (2024). Motivation and English learning outcomes in digital classrooms. *Indonesian Journal of Applied Linguistics*, 14(1), 85–97.
- 3 Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50(2), 248–287. [https://doi.org/10.1016/0749-5978\(91\)90022-L](https://doi.org/10.1016/0749-5978(91)90022-L)
- 4 Direktorat Guru dan Tenaga Kependidikan. (2021). *Pengembangan kompetensi guru di era digital*. Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi.
- 5 Drajadi, N. A., Tan, L., Haryati, S., Rochsantiningsih, D., & Zainnuri, H. (2021). Investigating English language teachers' beliefs in technology-enhanced language learning. *Asian EFL Journal*, 28(1), 123–145.
- 6 Fitriani, S. S., & Adnan, Z. (2022). Students' self-efficacy in online English learning environments. *TEFLIN Journal*, 33(2), 201–218.
- 7 Hendriani, S., & Muslim, A. B. (2020). Teacher-centered practices in Indonesian EFL classrooms. *Journal of Language Teaching and Research*, 11(4), 620–628.
- 8 Hidayat, R., & Pratama, H. (2020). Digital media and EFL students' motivation. *ELT Forum: Journal of English Language Teaching*, 9(2), 134–142.

- 9 Hung, H. T. (2021). Learner self-efficacy in technology-enhanced language learning. *Computer Assisted Language Learning*, 34(1–2), 1–23.
- 10 Istikharoh, R., & Utami, I. G. (2024). Self-efficacy and English language performance in Indonesian EFL contexts. *Journal of Education and Learning*, 18(1), 44–55.
- 11 Kemendikbud. (2020). *Kebijakan transformasi digital pendidikan*. Kementerian Pendidikan dan Kebudayaan.
- 12 Kurniawan, A., Suryani, A., & Laksmi, E. (2021). Metacognitive awareness and learner autonomy in online English learning. *Journal of Educational Technology Systems*, 50(2), 215–231.
- 13 Lee, J., & Drajati, N. A. (2019). Willingness to communicate and technology integration in EFL learning. *Language Learning & Technology*, 23(1), 1–15.
- 14 Lestari, D. (2021). Gamification and EFL learners' motivation. *Journal of English Language Studies*, 6(2), 98–109.
- 15 Lantolf, J. P., & Thorne, S. L. (2006). *Sociocultural Theory and the Genesis of Second Language Development*. Oxford: Oxford University Press.
- 16 Mulyadi, A. (2023). Digital pedagogy and teacher professionalism in Indonesia. *Jurnal Pendidikan Indonesia*, 12(3), 345–357.
- 17 Novianti, R. (2024). Gamified learning and students' motivation in EFL classrooms. *Journal of Language and Education*, 10(1), 56–68.
- 18 Nugroho, A., & Hafifah, G. N. (2022). Technology as substitution or transformation in EFL classrooms. *Journal of Foreign Language Teaching and Learning*, 7(1), 23–37.
- 19 Prasetyo, A. (2021). Technology integration and instructional practice in Indonesian schools. *Educational Research and Reviews*, 16(9), 325–334.
- 20 Pratama, H., & Hidayat, R. (2023). Technology-based learning and English achievement. *Journal of English Education*, 8(1), 1–13.
- 21 Putri, R. A. (2022). Mobile-assisted language learning and learner engagement. *Indonesian Journal of EFL Studies*, 5(2), 143–155.
- 22 Putri, R., Hadriana, & Eliwanti. (2023). Learner autonomy in digital EFL environments. *Journal of Applied Linguistics and Literacy*, 7(1), 66–78.
- 23 Rahman, A., & Dewi, P. (2022). Psychological factors in technology-enhanced EFL learning. *Journal of Language and Education*, 8(4), 377–389.
- 24 Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037//0003-066X.55.1.68>
- 25 Rahmawati, Y., & Fitriani, S. S. (2021). Motivation and EFL learning outcomes. *Journal of English Teaching*, 7(3), 241–252.
- 26 Rahmawati, Y., Lestari, D., & Pratama, H. (2023). Student engagement in online English learning. *Journal of Language Teaching and Research*, 14(2), 456–468.
- 27 Sari, F., & Wahyuni, S. (2021). Technology use and EFL learner engagement. *Journal of English Education Research*, 2(1), 15–28.
- 28 Sari, F., Wahyuni, S., & Nugroho, A. (2022). Psychological readiness in digital EFL learning. *Indonesian Journal of Applied Linguistics*, 12(2), 289–301.
- 29 Sukardi, & Nugroho, A. (2021). English proficiency and global competitiveness. *Journal of Education Policy*, 6(2), 101–112.
- 30 Sulastris, D., Rahman, A., & Putra, B. (2022). Student-centered learning in digital English classrooms. *Journal of Language Pedagogy*, 4(2), 88–101.
- 31 Supardi, S., & Triansyah, F. (2025). Self-efficacy and resilience in EFL learning. *Journal of Educational Psychology*, 19(1), 73–86.
- 32 Suryani, A. (2022). English education and global mobility. *Journal of International Education Studies*, 15(4), 12–25.
- 33 Susanti, R., & Rahayu, N. (2020). Learner autonomy in online EFL learning. *Journal of English Language Teaching Innovations*, 3(1), 45–57.
- 34 Sutrisno, B., Rahman, A., & Lestari, D. (2023). Interdependence of psychological factors in EFL learning. *Journal of Language Learning Research*, 9(2), 159–173.
- 35 Tazkia, N. (2025). Digital feedback and learner motivation. *Journal of Technology in Language Education*, 11(1), 34–49.
- 36 Warni, S., Aziz, A., & Febriawan, D. (2025). Autonomous learning through digital platforms. *Journal of English for Academic Purposes*, 58, 101–115.
- 37 Wijaya, R., & Astuti, P. (2023). Technology integration and learner psychology. *Journal of Educational Technology Development*, 21(3), 211–225.
- 38 Wulandari, M. (2023). Online learning and learner autonomy in EFL contexts. *Journal of English Language Education*, 10(2), 134–147.
- 39 Wulandari, M., & Cahyono, B. Y. (2022). Authentic input through digital media in EFL learning. *Studies in English Language Teaching*, 10(3), 250–262.
- 40 Yuliana, S. (2023). Feedback and self-efficacy in online English learning. *Journal of Language Assessment*, 7(2), 90–103.