

**AI Pedagogy Through Intersecting Paradigms: A TAM–SDT Framework for
Second Language Learning**

1.Evans Sam Victor J

Ph.D. Research Scholar, Department of English and Foreign Languages, Bharathiar
University, Coimbatore

2.Dr. P. Nagaraj

Professor and Head, Department of English and Foreign Languages, Bharathiar University,
Coimbatore

Article Received: 04/07/2026

Article Accepted: 06/08/2026

Published Online: 07/08/2026

DOI: 10.47311/IJOES.2026.8.08.134

Abstract:

Artificial intelligence (AI) is increasingly recognized as a transformative force in second language (L2) education, reshaping how learners access content, interact with peers, and engage with instructors. Yet, theoretical accounts of AI pedagogy often remain fragmented, privileging either technological acceptance or motivational psychology without integrating the two. This Study proposes a comprehensive framework that unites the Technology Acceptance Model (TAM) with Self-Determination Theory (SDT), offering a dual-paradigm view to analyse and design AI-mediated L2 learning environments.

From the perspective of TAM, learners' perceptions of usefulness and ease of use are pivotal in determining whether AI-driven tools such as adaptive tutoring systems, intelligent feedback engines, or gamified platforms are adopted. These perceptions shape initial engagement, but TAM alone cannot explain sustained participation or long-term achievement. SDT complements this by foregrounding autonomy, competence, and relatedness as essential psychological needs that drive intrinsic motivation. In L2 contexts, autonomy is promoted when AI systems personalize pathways, competence is strengthened through scaffolded challenges and adaptive feedback, and relatedness is cultivated via collaborative or socially interactive features.

The intersection of TAM and SDT conceptualizes AI pedagogy as a dynamic interplay between cognitive appraisal and motivational regulation. Learners may initially embrace AI tools because they perceive them as useful and easy to navigate, but enduring engagement depends on whether these tools simultaneously nurture psychological needs. This synthesis underscores that technological design and motivational affordances are not discrete domains but mutually reinforcing dimensions of effective pedagogy.

Key Words – Language pedagogy, Second language, Self – Determination Theory, Artificial Intelligence, Technology Acceptance Model, etc.,

Introduction

Artificial Intelligence (AI) has become one of the most influential forces shaping contemporary education, particularly in second language acquisition. Over the past decade, AI-mediated tools have moved from experimental prototypes to mainstream applications, offering learners adaptive pathways, personalized feedback, and immersive environments that were once unimaginable in traditional classrooms (Öztürk, 2026). In English as a Second Language (ESL) contexts, AI technologies presently used in academia such as intelligent tutoring systems, gamified mobile applications, and conversational agents are increasingly deployed to address longstanding challenges like limited classroom exposure, lack of individualized support, and restricted access to authentic communicative practice (Godwin-Jones, 2011). These tools provide not only efficiency but also transformation and enable the learners to engage with language in ways that are dynamic, interactive, and adapted to their unique needs. Yet, despite these advances, a paradox exists. Learners often adopt AI tools enthusiastically at first, only to abandon them after initial use. This raises a fundamental question that what explains both the decision to adopt AI technologies and the motivation to sustain engagement for meaningful achievement?

Existing studies provide partial answers but remain theoretically fragmented. The Technology Acceptance Model (TAM), introduced by Davis in 1989, has been widely applied to predict technology adoption in educational contexts (Davis, 1989). TAM emphasizes constructs such as perceived usefulness, ease of use, enjoyment, and behavioral intention, offering a predictive view for initial acceptance of AI tools. In language learning, TAM has been used to explain why learners choose to download mobile apps, engage with online platforms, or experiment with AI-driven tutors (Godwin-Jones, 2011). However, TAM is limited in scope. It explains adoption but not persistence. Learners may perceive an AI tool as useful and easy to use, but these perceptions alone do not guarantee sustained engagement or achievement.

In contrast, the Self-Determination Theory (SDT), developed by Deci and Ryan, focuses on the psychological needs that drive intrinsic motivation: autonomy, competence, and relatedness (Deci & Ryan, 2014; Ryan & Deci, 2000). SDT has been influential in language learning research, explaining why learners persist in challenging tasks, derive satisfaction from mastery, and remain engaged through social interaction (Hamari et al., 2014). In ESL contexts, SDT has been applied to understand classroom motivation, peer collaboration, and gamified learning environments (Reeve, 2012). Yet, SDT does not account for the initial decision to adopt technology. A learner may feel motivated to practice vocabulary or grammar, but without perceiving an AI tool as useful or easy to use, adoption may never occur.

Literature Review

The studies surrounding Artificial Intelligence (AI) in language education have grown exponentially in recent years, reflecting both the technological advances that have

reshaped classrooms and the theoretical debates that attempt to explain learner behavior (Ryan & Deci, 2018). Within English as a Second Language (ESL) contexts, AI tools such as adaptive learning platforms, gamified mobile applications, and conversational agents have been heralded as transformative innovations (Godwin-Jones, 2011). They offer individualized learning pathways, immediate feedback, and authentic communicative practice. Yet, despite their potential, the literature reveals persistent challenges: learners often adopt these tools enthusiastically but fail to sustain engagement, leading to high dropout rates and superficial use (Deci & Ryan, 2014). This paradox has prompted researchers to examine adoption and motivation through different theoretical lenses, most notably the Technology Acceptance Model (TAM) and the Self-Determination Theory (SDT). However, these paradigms have largely been applied in isolation, resulting in fragmented insights that fail to capture the full learner journey.

The Technology Acceptance Model, introduced by Davis in 1989, originated in the field of information systems as a way to predict why individuals accept or reject new technologies (Davis, 1989). Its central constructs such as perceived usefulness and perceived ease of use were later expanded to include enjoyment and behavioral intention, making the model more adaptable to educational contexts (Venkatesh & Davis, 2000). In language learning, TAM has been applied to explain adoption of e-learning platforms, mobile apps, and AI-driven tutors (Godwin-Jones, 2011). Studies consistently show that learners are more likely to adopt tools they perceive as useful for improving language skills and easy to navigate (Öztürk, 2026). For example, research on mobile vocabulary apps demonstrates that perceived usefulness strongly predicts initial adoption, while ease of use reduces barriers to entry (Yang, 2026). Similarly, AI-driven pronunciation tools are often adopted because learners find them accessible and effective in providing immediate feedback (Godwin-Jones, 2011). Yet, TAM's explanatory power diminishes when the focus shifts from adoption to persistence. Learners may adopt tools but abandon them quickly, suggesting that adoption predictors alone cannot explain sustained achievement (Ryan & Deci, 2018).

Critiques of TAM highlight its limitations in capturing the affective and motivational dimensions of learning. By reducing behavior to utilitarian judgments of usefulness and ease, TAM overlooks the deeper psychological needs that drive persistence (Venkatesh & Davis, 2000). In language learning, this is particularly problematic because learners often engage with tools for reasons beyond efficiency. Gamified applications, for instance, may be adopted not because they are perceived as useful, but because they are enjoyable or socially engaging (Hamari et al., 2014). This suggests that TAM's constructs must be complemented by motivational theories that account for intrinsic drivers of persistence. Without such integration, TAM risks offering a narrow view of learner behavior, focusing on adoption while neglecting the motivational processes that sustain engagement.

The Self-Determination Theory, developed by Deci and Ryan, provides such a motivational lens (Deci & Ryan, 2014; Ryan & Deci, 2000). SDT emphasizes three basic psychological needs: autonomy, competence, and relatedness. Autonomy refers to the sense of volition and choice in learning; competence reflects the perception of mastery and progress; and relatedness captures the social connections that make learning meaningful (Ryan & Deci, 2000). In ESL contexts, these needs manifest in learners' desire to choose their learning paths, experience mastery through progress, and connect meaningfully with peers or teachers (Surachmi W et al., 2025). Studies consistently show that when these needs are met, learners persist, engage deeply, and achieve higher outcomes (Reeve, 2012). For example, research on gamified language learning platforms demonstrates that autonomy in choosing modules, competence through adaptive feedback, and relatedness via peer challenges significantly enhance motivation (Chen et al., 2020). Unlike TAM, SDT does not focus on adoption but on the motivational processes that sustain engagement. This makes SDT particularly relevant for explaining why learners continue to use AI tools after initial adoption, but it leaves unanswered the question of why learners adopt them in the first place. The literature reveals that TAM and SDT have often been treated as separate paradigms, resulting in partial explanations of learner behavior. Some scholars have noted overlaps, such as TAM's construct of perceived enjoyment aligning with SDT's intrinsic motivation, or ease of use resonating with competence (Del Bosque et al., 2025). Yet, these connections remain underdeveloped, and most studies fail to integrate adoption and motivation into a single framework. This fragmentation limits our understanding of AI pedagogy, particularly in ESL contexts where adoption and motivation are inseparable. Learners may adopt AI tools because they perceive them as useful, but sustained engagement depends on whether those tools foster autonomy, competence, and relatedness (Ryan & Deci, 2018). Without integration, research risks overlooking the dynamic interplay between initial adoption and sustained engagement.

AI pedagogy itself introduces distinctive features that demand theoretical integration. Unlike traditional digital tools, AI systems are adaptive, interactive, and often gamified. They respond to learner behavior, adjust difficulty levels, and provide personalized feedback (Chua & Annamalai, 2025). These features engage both TAM and SDT constructs simultaneously. Adaptive feedback enhances perceived usefulness while fostering competence. Gamification increases enjoyment while reinforcing autonomy and relatedness (Hamari et al., 2014). Social features such as peer challenges strengthen behavioral intention while deepening relatedness. In this way, AI pedagogy embodies the intersection of adoption and motivation, making TAM–SDT integration not only desirable but necessary.

Empirical studies further underscore this need. Dropout rates in AI-mediated language learning remain high, with many learners abandoning apps after initial use (Öztürk, 2026). Research attributes this to superficial adoption, where learners perceive tools as useful but fail to sustain motivation. Conversely, motivated learners may struggle with tools that

are difficult to use or perceived as irrelevant, leading to non-adoption (Chen et al., 2020). These findings highlight the inadequacy of studying adoption or motivation in isolation. A holistic framework must account for both, recognizing that usability and motivational support are interdependent in shaping learner outcomes. For instance, a learner may adopt an AI grammar tutor because it is easy to use, but persistence depends on whether the tutor fosters competence through measurable progress (Mei et al., 2026). Similarly, a learner may feel motivated to practice vocabulary, but without perceiving the app as useful, adoption may never occur. These examples illustrate the dynamic interplay between TAM and SDT, underscoring the need for integration.

Cross-cultural perspectives add further complexity to the literature. Studies show that perceptions of usefulness and ease of use vary across cultural contexts, as do motivational drivers such as autonomy and relatedness (Davis, 1989). In collectivist cultures, relatedness may play a stronger role in sustaining engagement, while in individualist cultures, autonomy may be more critical (Venkatesh & Davis, 2000). AI pedagogy must therefore be designed with cultural sensitivity, ensuring that tools foster both adoption and motivation across diverse learner populations. The TAM–SDT framework provides a lens for analyzing these cultural variations, highlighting how adoption predictors and motivational drivers interact differently in different contexts.

Gamification offers another dimension that illustrates the intersection of TAM and SDT. Game mechanics such as progression, rewards, and feedback increase perceived enjoyment, aligning with TAM, while simultaneously fostering autonomy and competence, aligning with SDT (Hamari et al., 2014). For example, a learner who progresses through levels in an AI-mediated grammar app may perceive the tool as enjoyable while also feeling competent. This dual engagement underscores the need for integration, as neither TAM nor SDT alone can explain the full learner experience. The literature on gamification consistently shows that when game mechanics are designed to support psychological needs, learners are more likely to persist and achieve (Ryan & Deci, 2018). This reinforces the argument that adoption and motivation must be studied together.

Overall, the review demonstrates that while TAM explains adoption and SDT explains persistence, neither alone can capture the complexity of AI pedagogy in ESL contexts. AI tools, with their adaptive and gamified features, naturally engage both paradigms, making integration essential (Godwin-Jones, 2011). By synthesizing TAM and SDT, this study advances a conceptual framework that reflects the full learner journey, from initial adoption to sustained engagement and achievement. Such integration enriches theoretical discourse and provides practical guidance for designing AI systems that are both usable and motivationally supportive, ensuring that learners not only adopt but also persist in their pursuit of language mastery (Chen et al., 2020).

Methodology

The methodological orientation of this study is conceptual and theoretical rather than empirical, reflecting the intention to construct a framework that integrates adoption and motivation in AI-mediated second language learning. Instead of collecting quantitative data or conducting statistical analyses, the study relies on a systematic synthesis of existing studies, drawing from educational technology, applied linguistics, and motivational psychology (Surachmi W et al., 2025). This approach is justified by the recognition that current studies often treat adoption and motivation as separate domains, resulting in fragmented insights. By weaving together, the Technology Acceptance Model (TAM) and Self-Determination Theory (SDT), the study aims to advance a hybrid paradigm that captures the full learner journey in English as a Second Language (ESL) contexts (Deci & Ryan, 2014; Dörnyei, 2009).

Conceptual mapping serves as the analytical strategy for this methodology. It involves identifying intersections where TAM and SDT constructs converge, as well as complementarities where they address different dimensions of learner experience (Venkatesh & Davis, 2000). For instance, perceived enjoyment in TAM aligns closely with intrinsic motivation in SDT, while ease of use resonates with competence. By highlighting such intersections, the study constructs a dual-paradigm framework that explains both the initial decision to adopt AI tools and the motivational processes that sustain engagement (Venkatesh & Davis, 2000).

Examples from ESL contexts are used to illustrate the applicability of TAM and SDT constructs. For instance, AI-driven pronunciation tools are often adopted because learners perceive them as useful and easy to use, reflecting TAM constructs (Chen et al., 2020). However, sustained engagement depends on whether these tools foster competence by showing measurable improvement, autonomy by allowing learners to choose practice modules, and relatedness by enabling peer comparison or collaborative challenges, reflecting SDT constructs (Reeve, 2012). Similarly, gamified vocabulary apps may attract learners through perceived enjoyment, but long-term achievement depends on whether enjoyment translates into intrinsic motivation, reinforcing autonomy and competence (Ryan & Deci, 2018).

Conceptual Integration

The outcome of the conceptual methodology is the proposition of a dual-paradigm framework that integrates TAM and SDT to explain AI pedagogy in second language learning. This framework is designed to capture the full learner journey, from initial adoption to sustained engagement and achievement, thereby addressing the limitations of treating adoption and motivation as separate domains (Davis, 1989; Ryan & Deci, 2000). By situating TAM and SDT as intersecting paradigms, the framework provides a holistic lens through which the dynamics of AI-mediated ESL learning can be understood.

At its core, the framework positions TAM constructs as predictors of adoption. Learners are more likely to engage with AI tools when they perceive them as useful, easy to use, and enjoyable, leading to behavioral intention and initial uptake (Venkatesh & Davis, 2000). These adoption predictors are essential entry points, ensuring that learners are willing to experiment with AI-mediated platforms. However, adoption alone is insufficient. Without motivational support, learners may abandon tools after initial use, resulting in superficial engagement (Deterding et al., 2011). This is where SDT constructs become critical. Autonomy, competence, and relatedness provide the motivational foundation that sustains engagement, ensuring that learners not only adopt but also persist in their pursuit of language mastery (Ryan & Deci, 2018).

The framework conceptualizes adoption and motivation as dynamically intertwined. TAM explains the entry point, while SDT explains continuity. Together, they form a dual-paradigm model that reflects the cyclical nature of learning: adoption leads to engagement, engagement reinforces motivation, and motivation sustains continued use ((Dörnyei, 2009). The integration also highlights points of overlap, such as perceived enjoyment in TAM aligning with intrinsic motivation in SDT, and ease of use resonating with competence (Ryan & Deci, 2000). These intersections demonstrate that adoption predictors and motivational drivers are not isolated but mutually reinforcing.

To illustrate, consider an AI-driven vocabulary app. Learners may adopt it because they perceive it as useful and easy to navigate, reflecting TAM constructs (Davis, 1989). However, sustained engagement depends on whether the app fosters autonomy by allowing learners to select modules, competence by providing adaptive feedback that demonstrates progress, and relatedness by enabling peer challenges or collaborative tasks, reflecting SDT constructs (Ryan & Deci, 2000). Similarly, gamified platforms may attract learners through perceived enjoyment, but long-term achievement depends on whether enjoyment translates into intrinsic motivation, reinforcing autonomy and competence (Ryan & Deci, 2018).

The framework also accommodates cultural variations, recognizing that adoption and motivation may manifest differently across contexts. In collectivist cultures, relatedness may play a stronger role in sustaining engagement, while in individualist cultures, autonomy may be more critical (Ryan & Deci, 2018). By integrating TAM and SDT, the framework provides a lens for analyzing these cultural differences, ensuring that AI pedagogy is sensitive to diverse learner populations.

Pedagogical Implications

Bridging Adoption and Motivation

The TAM–SDT framework demonstrates that adoption and motivation are not isolated phenomena but mutually reinforcing dimensions of AI pedagogy. Adoption predictors such as perceived usefulness and ease of use explain why learners initially engage with AI tools (Davis, 1989; Venkatesh & Davis, 2000), while motivational drivers such as

autonomy, competence, and relatedness explain why they persist (Deci & Ryan, 2014; Ryan & Deci, 2000). By situating these paradigms together, the framework reconceptualizes the learner journey as a continuum rather than a sequence of disconnected stages. This integration challenges fragmented approaches in the literature and enriches theoretical discourse by showing how initial perceptions evolve into deeper motivational commitments (Dörnyei, 2009). For example, a learner who adopts an AI grammar tutor because it is easy to use may continue using it because adaptive feedback stimulates competence, thereby transforming adoption into sustained engagement (Mei et al., 2026). The framework thus bridges a critical gap, offering a holistic view that captures the dynamic interplay between entry and continuity.

Designing AI for Sustainable Engagement

Pedagogically, the framework emphasizes that usability alone cannot secure achievement. AI systems must be designed to promote autonomy, competence, and relatedness while remaining accessible and enjoyable (Reeve, 2012). Adaptive feedback should simultaneously enhance perceived usefulness and strengthen mastery, ensuring that learners feel progress is tangible (Hamari et al., 2014). Gamified features should combine enjoyment with intrinsic motivation, transforming external rewards into internal satisfaction (Ryan & Deci, 2018). Collaborative tools should align behavioral intention with social connection, creating environments where learners feel supported by peers (Godwin-Jones, 2011). This balance ensures that learners not only adopt but also sustain engagement. Without motivational support, adoption remains superficial; without usability, motivation cannot flourish. The framework therefore calls for a design philosophy that integrates adoption predictors with motivational drivers, making AI pedagogy both effective and sustainable.

Translating Theory into Classroom Practice

For educators, the framework provides actionable strategies that translate theory into practice. Teachers can encourage adoption by highlighting the usefulness and ease of AI platforms, thereby reducing barriers to entry (Dichev & Dicheva, 2017). At the same time, they can nurture motivation by creating opportunities for autonomy, competence, and relatedness (Ryan & Deci, 2000). Personalized tasks allow learners to choose their learning paths, providing autonomy. Adaptive pathways provide feedback that demonstrates progress, enhancing competence (Deterding et al., 2011). Peer collaboration and group challenges strengthen relatedness, making learning socially meaningful (Deci & Ryan, 2014). Instructional designers are guided to embed psychological support into usability features, ensuring that AI tools are not only efficient but also motivationally supportive (Reeve, 2012). Policymakers are reminded that investments in technology must prioritize sustainability, not just novelty, recognizing that long-term achievement depends on both adoption and motivation (Chen et al., 2020). In this way, the framework provides a roadmap for integrating AI pedagogy into classrooms in ways that are both theoretically informed and practically effective.

Accounting for Cultural Variability

The framework also accommodates cultural differences in learner behavior, recognizing that adoption and motivation may manifest differently across contexts. In collectivist cultures, relatedness may be the dominant driver of persistence, with learners valuing social connection and group harmony (Davis, 1989). In individualist cultures, autonomy may be more critical, with learners prioritizing personal choice and independence (Ryan & Deci, 2018). By integrating TAM and SDT, the model provides a perspective for analyzing these variations, ensuring that AI pedagogy remains adaptable across diverse ESL populations (Venkatesh & Davis, 2000). This cultural sensitivity enhances the global relevance of the framework, making it applicable across contexts where expectations and needs of the learners differ. It also invites researchers to explore how cultural factors influence the interplay between adoption and motivation, thereby enriching the theoretical model and extending its applicability. For example, an AI platform designed for collectivist contexts may emphasize collaborative features, while one designed for individualist contexts may prioritize personalized pathways (Dichev & Dicheva, 2017). The framework thus ensures that AI pedagogy is not only effective but also culturally responsive.

Directions for Empirical Validation

Future study is essential to test and refine the framework. Longitudinal studies can reveal how adoption and motivation interact over time, showing whether initial perceptions of usefulness and ease of use evolve into sustained engagement through autonomy, competence, and relatedness (Chen et al., 2020). Cross-cultural comparisons can highlight contextual differences, demonstrating how cultural factors shape the interplay between adoption and motivation (Dörnyei, 2009). Qualitative case studies can provide rich insights into learner experiences, offering detailed accounts of how adoption predictors and motivational drivers manifest in practice (Ryan & Deci, 2000). These empirical directions will strengthen the framework's stability, extend its applicability, and ensure that it evolves in response to diverse educational realities. By pursuing these research directions, scholars can build upon the conceptual foundation established in this study, enhancing its theoretical and practical contributions.

Advancing AI Pedagogy

The TAM - SDT framework underscores the need for AI systems that are both usable and motivationally supportive, ensuring that learners not only adopt but also persist in their pursuit of language mastery (Ryan & Deci, 2018). By situating TAM and SDT as intersecting paradigms, the framework contributes to the broader goal of creating AI pedagogy that is effective, sustainable, and transformative (Wan Kamaruddin et al., 2026). It provides a foundation for future empirical validation, invites interdisciplinary collaboration, and offers practical guidance for educators, designers, and policymakers (Chen et al., 2020). Most importantly, it highlights the learner as the central focus of AI pedagogy, ensuring that technology serves not only as a tool for adoption but also as a catalyst for sustained motivation and achievement (Reeve, 2012).

Conclusion

The TAM–SDT framework advances AI pedagogy by bridging adoption and motivation, enriching theory, guiding practice, and accommodating cultural diversity. Adoption predictors such as perceived usefulness, ease of use, and enjoyment explain why learners initially engage with AI tools (Davis, 1989; Venkatesh & Davis, 2000), while motivational drivers such as autonomy, competence, and relatedness explain why they persist (Deci & Ryan, 2014; Ryan & Deci, 2018). These paradigms as intersecting rather than isolated, the framework reconceptualizes the learner journey as a continuum, ensuring that technology serves both as an entry point and as a catalyst for sustained engagement.

Pedagogically, the framework emphasizes designing AI systems that are not only user-friendly but also foster learner motivation. Usability alone cannot secure achievement; without motivational support, adoption remains superficial, and without usability, motivation cannot flourish (Reeve, 2012). Gamification and adaptive feedback illustrate this integration, simultaneously enhancing perceived usefulness and fostering competence, autonomy, and relatedness (Hamari et al., 2014). Instructional designers and educators are therefore guided to embed psychological support into usability features, ensuring that AI tools are not only efficient but also transformative in sustaining learner achievement.

Culturally, the framework demonstrates adaptability across diverse contexts. In collectivist cultures, relatedness may be the dominant driver of persistence, while in individualist cultures, autonomy may be more critical (Yang, 2026). This sensitivity ensures that AI pedagogy remains globally relevant, accommodating variations in learner expectations and motivational orientations.

Works Cited

- Chen, Xiaoxia, et al. "Application and Theory Gaps during the Rise of Artificial Intelligence in Education." *Computers and Education: Artificial Intelligence*, vol. 1, 2020, article 100002,
- Chua, H. W., and N. Annamalai. "A Bibliometric Analysis and Systematic Review in AI Chatbots in Language Teaching and Learning." *International Journal of Technology in Education*, vol. 8, no. 2, 2025, pp. 274–331,
- Davis, Fred D. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly*, vol. 13, no. 3, 1989, pp. 319–40,
- Deci, Edward L., and Richard M. Ryan. *Intrinsic Motivation and Self-Determination in Human Behavior*. Springer, 2014
- Del Bosque, A., et al. "The Role of Artificial Intelligence in Gaming." *Applied Sciences*, vol. 15, 2025, pp. 1–20,

-
- Deterding, Sebastian, et al. "From Game Design Elements to Gamefulness: Defining 'Gamification.'" *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 2011, pp. 9–15,
- Dichev, Christo, and Darina Dicheva. "Gamifying Education: What Is Known, What Is Believed and What Remains Uncertain: A Critical Review." *International Journal of Educational Technology in Higher Education*, vol. 14, 2017, article 9,
- Dörnyei, Zoltán. *The Psychology of Second Language Acquisition*. Oxford UP, 2009
- Godwin-Jones, Robert. "Mobile Apps for Language Learning." *Language Learning & Technology*, vol. 15, no. 2, 2011, pp. 2–11,
- Hamari, Juho, et al. "Does Gamification Work? A Literature Review of Empirical Studies on Gamification." *2014 47th Hawaii International Conference on System Sciences*, 2014, pp. 3025–34,
- Mei, Z., et al. "Gamification in Foreign Language Education: A Bibliometric and Thematic Analysis." *International Journal of Academic Research in Business and Social Sciences*, vol. 16, no. 1, 2026, pp. 837–50,
- Öztürk, D. "Motivation and Technology in Voice-AI Adoption: An Empirical Validation of the Integrated Model in Social Studies Classrooms." *Education and Information Technologies*, 2026,
- Reeve, John. "A Self-Determination Theory Perspective on Student Engagement." *Handbook of Research on Student Engagement*, edited by Sandra L. Christenson et al., Springer, 2012, pp. 149–72,
- Ryan, Richard M., and Edward L. Deci. "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." *American Psychologist*, vol. 55, no. 1, 2000, pp. 68–78,
- Ryan, Richard M., and Edward L. Deci. *Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*. Guilford Press, 2018
- Surachmi W, S., et al. "Understanding EFL Students' Adoption of Generative AI for English Learning: An Integrated UTAUT2 Model and Self-Determination Theory." *Online Learning*, vol. 29, no. 4, 2025, pp. 311–40,
- Venkatesh, Viswanath, and Fred D. Davis. "A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies." *Management Science*, vol. 46, no. 2, 2000, pp. 186–204,
- Wan Kamaruddin, W. A. I., et al. "Gamification in Foreign Language Learning: A Bibliometric Review." *International Journal of Modern Education*, vol. 8, no. 29, 2026, pp. 96–110,
- Yang, S. C. "Integrating Technology Acceptance, Self-Determination, and Self-Regulation: A Structural Model of Generative AI-Supported Learning and Competence." *Computers in Human Behavior*, vol. 179, 2026, article 108933,