




# The Role of Digital Technologies in Sustaining Emotional Engagement in Foreign Language Learning

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**Abstract.** This article explores the critical role of digital technologies in sustaining emotional engagement in foreign language learning, highlighting the interplay between cognitive and emotional dimensions. It investigates how synchronous platforms (e.g., Zoom), asynchronous tools (e.g., mobile apps), and gamified environments influence learners' emotional responses—motivation, anxiety, enjoyment, and frustration—and their impact on learning outcomes. Research on the sustainability of these emotional effects is still lacking, despite the demonstrated short-term engagement and performance boosts from digital tools. This article synthesizes current research to examine the long-term sustainability of emotional engagement, particularly in hybrid learning environments that blend synchronous and asynchronous modalities. By differentiating emotional dynamics across platforms, it identifies strategies to foster resilience and sustained motivation, addressing issues, such as technological fatigue and isolation. The article concludes with practical implications for educators, emphasizing the need for thoughtful integration of digital tools to nurture both cognitive and emotional engagement in language learning, ultimately informing pedagogical practices for creating inclusive, emotionally supportive learning environments.

**Keywords:** Digital technologies, emotions, foreign language, online learning, offline learning

## 1 Introduction

The intersection of digital technologies and emotional engagement in language learning has emerged as a critical area of study, especially within the context of foreign language education. Over the last decade, the explosion of digital platforms and tools has revolutionized traditional language learning paradigms, shifting the focus from primarily cognitive aspects, such as vocabulary acquisition and grammatical precision, to include emotional engagement. Recent research emphasizes the importance of this shift, highlighting how emotional responses—motivation, anxiety, enjoyment, and frustration—play critical roles in not only immediate learning outcomes but also in cultivating long-term learner motivation and resilience [16, 18, 52].

Emotional engagement, as a multifaceted construct, significantly influences the learning experience across both online synchronous platforms, such as Zoom or Mi-

Microsoft Teams and offline asynchronous tools such as mobile apps and gamified environments. In synchronous settings, real-time interactions help foster a sense of connection and provide immediate feedback, potentially reducing anxiety and boosting participation [2, 39]. Conversely, asynchronous tools offer autonomy, enabling learners to interact with the material at their own pace, thus enhancing intrinsic motivation. As an example, gamified apps such as Duolingo stimulate positive emotional responses through achievement tracking and immediate feedback, boosting satisfaction and engagement [18, 52, 31].

Despite considerable insights into the role of emotional engagement, there is a notable research gap in understanding its long-term sustainability and the depth of emotional support required in digital learning environments. While studies have documented short-term emotional effects, such as transient motivation or anxiety relief, less is known about enduring emotional engagement or the resilience required to manage persistent challenges in hybrid learning models blending synchronous and asynchronous elements [45, 51]. Moreover, potential negative impacts such as technological fatigue, feelings of isolation, and frustrations due to technical issues in synchronous contexts need more comprehensive exploration [24, 53].

This article aims to delve deeper into how digital technologies foster or hinder emotional engagement over time, across both synchronous and asynchronous learning platforms. By synthesizing current research and integrating theoretical frameworks on sustainable learning and emotional engagement, this study seeks to unpack how digital contexts shape learners' emotional states, highlighting strategies to bolster long-term emotional resilience and motivation. The focus will be on distinguishing the emotional dynamics in synchronous interactions from those in more autonomous offline digital learning and examining how these varying modalities support or impede sustained emotional engagement [1]. Through this comprehensive analysis, the study aims to contribute to broader educational discussions, providing actionable insights on optimizing digital technologies to create inclusive, supportive, and emotionally sustainable learning environments for diverse learners [22, 32]. Eventually, this research will enhance our understanding of the complex interplay between digital tools and emotional engagement, informing pedagogical practices that effectively nurture long-term success in language learning.

## **2 Literature Review**

### **2.1 Emotional Engagement in Digital Language Learning**

Emotional engagement plays a critical role in digital language learning, influencing both learner behavior and educational outcomes. Research has shown that positive emotions, such as motivation and enjoyment, can bolster perseverance and enhance language acquisition, while negative emotions, e.g., anxiety can hinder progress and lead to disengagement from learning activities [46, 54]. This dynamic has driven research into how digital tools, especially through gamification strategies that incorporate game-like elements into learning environments, can either amplify or alleviate these emo-

tional responses [54]. Platforms, e.g., Duolingo, Babbel, and Memrise, use gamification, which incorporates mechanics, involving immediate feedback, achievement tracking, and rewards. These mechanics not only engage learners but also satisfy them, leading to improved language outcomes [47, 10]. Nonetheless, studies have also indicated that the initial enthusiasm for gamified learning may wane over time, suggesting the need for further investigation into how these tools sustain long-term emotional engagement [28, 29, 10, 3].

Online synchronous learning environments such as Zoom and Microsoft Teams also significantly impact emotional engagement by enabling real-time interaction between learners and instructors. This setup reduces language anxiety and boosts willingness to communicate by providing a platform for immediate feedback and peer interaction, thus creating a supportive emotional atmosphere [35, 12, 30]. Despite these benefits, the emotional sustainability of relying on such synchronous tools is uncertain, with prolonged use potentially leading to fatigue and frustration, particularly when faced with technical challenges or the lack of physical interaction. This emphasizes the importance of ongoing research to determine how synchronous learning can consistently support emotional engagement without leading to negative emotional buildup.

The integration of gamification into language learning has significantly improved motivation and engagement, demonstrating that game elements like points, badges, and leaderboards can make learning more interactive and enjoyable. This approach not only deepens engagement but also enhances self-efficacy, giving learners a sense of achievement that boosts their emotional investment in the learning process [36, 49, 47, 34, 26, 48]. Nevertheless, the ongoing challenge lies in effectively utilizing these digital tools to sustain emotional engagement over an extended period, rather than merely generating fleeting excitement.

The transformative impact of mobile applications and digital platforms on language education is undeniable, as they make learning more accessible and appealing, particularly to digital natives. The user-friendly interfaces and engaging content of popular gamified apps like Duolingo enhance the learning experience by integrating elements of social interaction [10, 11, 38]. Yet, while these technologies offer the potential to practice language skills flexibly, there remains a crucial need to ensure they promote sustained rather than fleeting emotional engagement. Addressing this will require continuous refinement of digital tools to effectively meet diverse learner needs while maintaining a balance between technological innovation and learners' emotional well-being.

## **2.2 Offline Digital Tools and Asynchronous Learning**

The exploration of offline digital tools and asynchronous learning environments reveals a nuanced relationship between learner autonomy, emotional engagement, and intrinsic motivation. These environments, marked by flexibility and learner control, allow individuals to engage with educational content at their own pace, enhancing intrinsic motivation and emotional investment in the learning process. As Waluyo and Bucol [49] observe, tools such as interactive software and digital flashcards enable learners to set personal goals and track progress, fostering sustained engagement. Furthermore, Feng [19] emphasizes that such autonomy enhances learners' emotional experiences, making

their educational journey more fulfilling and personally relevant. However, despite their benefits, asynchronous tools also present challenges that can undermine their effectiveness, particularly in maintaining emotional engagement over time. The absence of real-time interactions can exacerbate feelings of isolation and disconnectedness, leading to frustration and a decline in motivation, especially when learners face difficulties without immediate support [21]. These challenges stress the need for strategies that not only leverage the benefits of asynchronous tools but also address their emotional drawbacks to sustain learner engagement.

The relationship between learner autonomy and academic success is well-established, with studies demonstrating a positive correlation between autonomy and educational outcomes in various learning contexts, including during disruptions, e.g., the COVID-19 pandemic [7, 19]. Moreover, the integration of digital tools tailored to enhance autonomy—such as Web 2.0 tools—can significantly boost learners' communicative abilities and overall engagement in learning [23, 17]. These findings highlight the transformative potential of well-designed asynchronous learning environments in fostering effective and engaging educational experiences. Despite these advantages, the effective implementation of learner autonomy through digital tools remains inconsistent, often limited by educators' varying abilities to integrate these practices effectively [9].

Besides, the emotional dimensions of autonomy, such as the link between emotional intelligence and autonomous learning capabilities, suggest that enhancing emotional intelligence could further empower learners in asynchronous settings [20]. Therefore, future research should focus on developing comprehensive strategies that address both the emotional and instructional aspects of asynchronous learning. This includes training educators to foster autonomy effectively, enhancing emotional intelligence among learners, and creating supportive environments that mitigate feelings of isolation and enhance overall learner engagement.

### **2.3 The Balance Between Positive and Negative Emotional Experiences**

Research on digital language learning often highlights the positive impacts of gamification and personalized tools that enhance motivation and engagement. However, it is equally important to consider the negative emotional experiences that learners may encounter, which can significantly detract from these benefits. Technical problems such as unstable internet connections and software glitches often lead to frustration and anxiety, disrupting the learning process and reducing overall engagement and satisfaction with digital platforms [27, 44]. These issues highlight the need for strong digital infrastructures that minimize technical disruptions to maintain learner engagement.

Furthermore, the emotional landscape of online learning is often compromised by the inherent limitations of digital platforms, particularly the lack of social presence crucial for meaningful interactions. Though synchronous tools, such as video conferencing enable real-time communication, they do not fully replicate the physical presence and non-verbal cues essential for deep emotional connections, often leading to feelings of isolation among learners [15, 37, 33]. The absence of these cues can diminish emotional

engagement over time, as social presence is known to significantly enhance both student satisfaction and perceived learning effectiveness [14, 55]. This gap suggests a need for improved virtual interaction designs that better simulate the nuances of face-to-face interactions.

Moreover, while the initial engagement benefits of gamification and personalization are well-documented, they often emphasize extrinsic rewards over intrinsic learning goals, potentially leading to a decline in engagement once the novelty wears off [6, 13]. Thus, although digital tools are frequently viewed positively, it is critical to address the emotional challenges they pose and their implications for sustained learner engagement. A balanced understanding of both positive and negative emotional impacts is essential for developing digital learning environments that support enduring engagement and emotional resilience. Future research should focus on these dynamics to better understand how to promote sustained emotional engagement and resilience among digital learners.

### 3 Case Studies

#### 3.1 Gamification and Autonomous Learning in EFL Education

**Background and Research Question.** These two studies investigate the role of technology in enhancing English as a Foreign Language (EFL) learning, with one examining the effects of gamification on vocabulary acquisition and the other focusing on autonomous learning in online classrooms. The first study, “The Pedagogical Use of Gamification in English Vocabulary Training and Learning in Higher Education” by Panmei and Waluyo [40], explores the influence of Quizizz on students' vocabulary learning and questions whether gamification can improve both learning outcomes and learner autonomy. On the other hand, Pratiwi and Waluyo [42] investigate how integrating digital tools such as Google Forms, Quizlet, and Kahoot facilitates autonomous learning in EFL students, particularly in developing listening, structure, and reading skills.

**Design, Context, and Participants.** Both studies adopt quasi-experimental designs to assess the impact of digital tools on learning. Panmei and Waluyo [40] evaluate the effectiveness of Quizizz in improving vocabulary acquisition among EFL students in higher education through a series of vocabulary tests administered to both control and experimental groups. Pratiwi and Waluyo [42] explore the use of digital tools among Indonesian vocational students in an online TOEFL preparation course. The participants were divided into two groups—one exposed to digital tools and the other using traditional methods. Learning outcomes were measured using pre- and post-tests, and student perceptions of autonomy were gathered through surveys.

**Findings and Discussion.** The findings highlight different outcomes regarding technology's role in sustaining learner engagement. Panmei and Waluyo [40] observed that

while gamification through Quizizz led to significant short-term improvements in vocabulary acquisition, it did not foster long-term learner autonomy. In contrast, Pratiwi and Waluyo [42] found that the integration of digital tools significantly enhanced autonomous learning, especially in listening and reading, although the impact on learning structure was more variable. Both studies suggest that while technology supports EFL learning, its sustainability depends on how it is integrated into the curriculum. While Pratiwi and Waluyo [42] emphasize the need for continued exploration of digital tools across different language skills, Panmei and Waluyo [40] call for more research on optimizing the design of gamified tools to enhance vocabulary retention and learner autonomy.

### 3.2 Emotional Engagement in Digital Learning Contexts

**Background and Research Question.** These studies focus on the emotional and motivational dimensions of learning in digital environments. The first study by Apridayani and Waluyo [5] examines how emotions such as enjoyment and boredom influence learning outcomes in synchronous online classes during the COVID-19 pandemic. The study seeks to understand how emotional factors affect academic performance in real-time digital classrooms. The second study [4] explores how gamification influences student motivation and behavior in language learning, asking whether game-like features in digital environments promote sustained learning motivation and engagement.

**Design, Context, and Participants.** Both studies employ mixed-method research designs, combining quantitative data with qualitative insights. Apridayani and Waluyo [5] gathered data from 171 first-year students at a Thai university, using surveys, GPA records, and short essays to analyze emotional engagement in synchronous classes. The study correlates emotions with academic performance, examining the extent to which positive and negative emotional experiences affect engagement. Meanwhile, Apridayani et al. [4] assess the impact of gamified tools on student motivation by incorporating features such as rewards, badges, and progress tracking. Data were collected from students interacting with gamified learning tools as part of their coursework through surveys and observational records.

**Findings and Discussion.** The studies present complementary insights into the emotional landscape of digital learning. Apridayani and Waluyo [5] found that positive emotions, particularly enjoyment derived from classroom satisfaction and peer interactions, were strongly associated with better academic performance, while negative emotions such as boredom detracted from engagement and learning outcomes. Conversely, Apridayani et al. [4] showed that gamified tools boosted short-term motivation and engagement, although these effects were not always sustained over time. Both studies emphasize the importance of emotional engagement, with Apridayani and Waluyo [5] advocating for fostering positive emotional experiences in real-time digital classes and Apridayani et al. [4] highlighting the need for well-designed gamified tools to promote long-term engagement.

### 3.3 Enhancing TOEFL Learning: Gamification and Flipped Classroom Approaches

**Background and Research Question.** These two studies investigate innovative approaches to improving English proficiency, specifically in the context of the Test of English as a Foreign Language (TOEFL). Arsyad et al. [8] explore the impact of integrating flipped learning and gamification on students' TOEFL performance, motivation, and emotional experiences, with an emphasis on cognitive and affective outcomes. Pratiwi and Waluyo [41], on the other hand, examine how task-based and game-based learning influences language performance in an online TOEFL preparation course, focusing on listening, structure, and reading skills.

**Design, Context, and Participants.** Both studies employ quasi-experimental designs that integrate qualitative and quantitative methodologies. Arsyad et al. [8] conducted their research with 27 undergraduate EFL students in a public university in Indonesia, utilizing pre- and post-TOEFL tests, surveys, and reflective essays to assess the impact of the flipped, gamified approach. Pratiwi and Waluyo [41] conducted their study in two Indonesian universities during the COVID-19 pandemic, comparing students exposed to task-based and game-based learning with those using traditional methods. Both studies used pre- and post-tests to evaluate TOEFL performance and surveys to measure motivation and engagement.

**Findings and Discussions.** Both studies confirm the positive impact of innovative pedagogical approaches on TOEFL performance. Arsyad et al. [8] found significant improvements in listening and reading scores, increased motivation, and enhanced enjoyment, though students experienced moderate anxiety throughout the process. Pratiwi and Waluyo [41] reported broader improvements across listening, structure, and reading skills, with game-based learning fostering higher engagement and overall performance. While Arsyad et al. [8] emphasize the emotional aspects of gamified learning, particularly its potential to reduce anxiety, Pratiwi and Waluyo [41] focus on the cognitive benefits across multiple language skills. Both studies stress the value of combining flipped and gamified approaches but suggest that further research is needed to explore emotional resilience and long-term learning outcomes.

### 3.4 Digital Technologies in Offline Learning

**Background and Research Question.** These studies focus on integrating digital technologies in offline EFL learning environments to enhance learning outcomes. Waluyo [50] investigates how the integration of smart classrooms and active learning principles, using various e-learning technologies, impacts students' performance in a general English course. In contrast, Rofiah and Waluyo [43] examine the role of gamified digital tools, such as Kahoot and Socrative, in improving EFL students' grammar and vocabulary skills, assessing their potential for sustaining long-term learner engagement.

**Design, Context, and Participants.** Both studies adopt quasi-experimental designs conducted in higher education settings. Waluyo [50] involved 983 Thai university students enrolled in a general English course, where pre- and post-tests assessed the impact of smart classroom technologies on vocabulary, grammar, listening, reading, and writing skills. Rofiah and Waluyo [43] focused on a smaller cohort of EFL learners, specifically analyzing how gamification affects vocabulary and grammar acquisition. Both studies used similar pre- and post-test measures to evaluate language proficiency, although Rofiah and Waluyo [43] placed more emphasis on the motivational aspects of gamified learning compared to Waluyo's broader examination of integrated language skills.

**Findings and Discussion.** Both studies demonstrate the effectiveness of digital tools in improving language skills, though the focus and results vary. Waluyo [50] found significant improvements in listening, grammar, and writing due to the use of smart classrooms that promote active participation. In contrast, Rofiah and Waluyo [43] reported notable gains in vocabulary and grammar acquisition through gamified tools but identified challenges in maintaining long-term engagement. While Waluyo [50] advocates for a comprehensive, multi-skill approach to technology integration, Rofiah and Waluyo [43] emphasize the need for continuous adaptation of gamified tools to sustain student interest. Together, these studies provide valuable insights into how digital technologies can enhance EFL learning, although they call for further exploration into how emotional and motivational factors influence long-term outcomes in digital learning contexts.

## 4 Conclusion and Implications

The integration of digital technologies in foreign language learning has undoubtedly transformed traditional pedagogical approaches by emphasizing both cognitive and emotional dimensions. Digital tools, e.g., gamified applications, synchronous online platforms, and offline asynchronous tools shape emotional engagement, which in turn shapes learner behavior and outcomes. Positive emotions, e.g., enjoyment and motivation, foster sustained participation and improved academic performance, while negative emotions, such as anxiety and frustration, can hinder engagement and progress. Nonetheless, this research also highlights the complexity of sustaining emotional engagement over time, especially in hybrid learning environments that blend synchronous and asynchronous modalities. The findings emphasize the need for a balanced approach that promotes emotional resilience and sustained motivation, ensuring learners remain engaged long-term.

The case studies reviewed in this paper illustrate the potential of gamified tools, flipped learning models, and autonomous learning environments to boost emotional engagement in language learning. For instance, studies have demonstrated that gamification can boost short-term motivation and engagement, but its long-term efficacy is uncertain, especially when the novelty of game-like features fades over time. Similarly, while synchronous platforms, such as Zoom or Microsoft Teams offer real-



time feedback and reduce language anxiety, their prolonged use may lead to fatigue and isolation. Asynchronous tools provide autonomy and flexibility, fostering intrinsic motivation, yet they may also contribute to disengagement when learners struggle without immediate support. These findings accentuate the importance of thoughtful and strategic integration of digital technologies to maintain emotional balance in language learning environments.

In terms of practical implications, educators and institutions must prioritize the emotional well-being of learners when designing digital language courses. This includes selecting and implementing digital tools that not only address cognitive skills but also nurture emotional engagement. To promote sustainable emotional resilience, there is a need for continuous refinement of these technologies to mitigate issues such as technological fatigue and learner isolation. Moreover, we should optimize synchronous and asynchronous platforms to foster a sense of community and belonging, and design gamified tools to focus on deeper learning engagement beyond extrinsic rewards. Future research should explore the development of comprehensive frameworks that address both the cognitive and emotional challenges of digital learning, ensuring that digital technologies continue to support long-term learner success.

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