EDUMASPUL:
Jurnal Pendidikan
P-ISSN 2548-8201 | E-ISSN 2580-0469

Vol. [10] No. [2] ([2026)1415-1438
DOI: 10.33487/edumaspul. v10i2.587

Exploring Student Engagement with Generative AI in EFL Education: A Systematic Literature Review

Sylvia
Universitas Terbuka, Tangerang Selatan, Indonesia

Email : sylvia89@ecampus.ut.ac.id

Received	Revised	Accepted	Published
[10-08-2026]	[13-08-2026]	[07-09-2026]	[01-10-2026]

Abstrak : Perkembangan kecerdasan buatan generatif (Generative Artificial Intelligence atau GenAI) telah membawa perubahan signifikan dalam pembelajaran bahasa Inggris sebagai bahasa asing (English as a Foreign Language atau EFL), khususnya dalam meningkatkan keterlibatan mahasiswa melalui interaksi pembelajaran yang lebih personal, fleksibel, dan interaktif. Penelitian ini bertujuan untuk menganalisis keterlibatan peserta didik dalam penggunaan GenAI pada pembelajaran EFL dengan meninjau dimensi perilaku, kognitif, dan emosional, serta mengidentifikasi faktor pedagogis, interpersonal, dan etis yang memengaruhinya. Penelitian menggunakan metode Systematic Literature Review (SLR) dengan pendekatan kualitatif melalui analisis isi terhadap enam penelitian yang diterbitkan pada periode 2024–2026. Data dianalisis menggunakan sintesis tematik berdasarkan empat fokus utama, yaitu keterlibatan perilaku dan interaksi peserta didik, keterlibatan kognitif dan efikasi diri dalam penggunaan AI, keterlibatan emosional dan motivasi belajar, serta faktor pedagogis, interpersonal, dan etis dalam pembelajaran berbantuan AI. Hasil kajian menunjukkan bahwa GenAI berpotensi meningkatkan partisipasi aktif, efisiensi pembelajaran, kepercayaan diri, motivasi, serta keterampilan berbahasa Inggris melalui umpan balik langsung, pembelajaran yang dipersonalisasi, dan kesempatan latihan secara mandiri. Temuan penelitian yang dikaji menunjukkan bahwa efikasi diri dalam penggunaan AI berpengaruh positif terhadap keterlibatan belajar ($\beta = 0{,}390$; $p < 0{,}001$), sedangkan hubungan interpersonal antara guru dan peserta didik turut berkontribusi terhadap keterlibatan belajar dengan nilai koefisien determinasi sebesar 53% ($R^2 = 0{,}53$). Meskipun demikian, penggunaan GenAI juga menghadirkan tantangan berupa ketergantungan teknologi, berkurangnya kemampuan berpikir mandiri, ketidakakuratan informasi, dan persoalan integritas akademik. Penelitian ini menyimpulkan bahwa efektivitas GenAI dalam meningkatkan keterlibatan peserta didik tidak hanya ditentukan oleh kecanggihan teknologi, tetapi juga oleh efikasi diri, kemampuan berpikir kritis, pendampingan pedagogis, hubungan interpersonal yang positif, dan kesadaran etis. Oleh karena itu, integrasi GenAI dalam pembelajaran EFL perlu dilaksanakan secara terarah, bertanggung jawab, dan berpusat pada peserta didik untuk mendukung keterlibatan belajar yang bermakna dan berkelanjutan.
Kata kunci: Generative Artificial Intelligence, Student Engagement, EFL Education, AI Learning Self-Efficacy, Systematic Literature Review.

Abstract: The rapid development of Generative Artificial Intelligence (GenAI) has significantly transformed English as a Foreign Language (EFL) education, particularly by enhancing student engagement through more personalized, flexible, and interactive learning experiences. This study aims to examine student engagement in GenAI-supported EFL learning by exploring its behavioral, cognitive, and emotional dimensions and identifying the pedagogical, interpersonal, and ethical factors influencing learners' engagement. This study employed a qualitative Systematic Literature Review (SLR) approach using content analysis of six studies published between 2024 and 2026. The collected data were analyzed through thematic synthesis focusing on four major themes: behavioral engagement and learner interaction, cognitive engagement and AI learning self-efficacy, emotional engagement and learning motivation, and pedagogical, interpersonal, and ethical factors shaping AI-assisted learning. The findings indicate that GenAI has considerable potential to enhance active participation, learning efficiency, self-confidence, motivation, and English language proficiency through immediate feedback, personalized learning experiences, and opportunities for autonomous language practice. The reviewed studies revealed that AI learning self-efficacy positively predicted student engagement ($\beta = 0.390$, $p < .001$), while teachers' interpersonal communication and teacher–student relationships collectively explained 53% of the variance in student engagement ($R^2 = 0.53$). Nevertheless, GenAI integration also presents several challenges, including excessive technological dependence, reduced independent thinking, inaccurate AI-generated information, and concerns regarding academic integrity. The study concludes that the effectiveness of GenAI in promoting student engagement depends not only on technological capabilities but also on learners' self-efficacy, critical thinking, pedagogical guidance, supportive interpersonal relationships, and ethical awareness. Therefore, GenAI should be integrated into EFL education through structured, responsible, and learner-centered pedagogical practices to foster meaningful, autonomous, and sustainable student engagement.
Keywords: Generative Artificial Intelligence, Student Engagement, EFL Education, AI Learning Self-Efficacy, Systematic Literature Review.

CITATION:	Sylvia, S. (2026). Exploring Student Engagement with Generative AI in EFL Education: A Systematic Literature Review. *Edumaspul: Jurnal Pendidikan*, *10*(2). https://doi.org/10.33487/edumaspul.v10i2.587
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INTRODUCTION

The rapid advancement of generative artificial intelligence (GenAI) has brought significant transformations to English as a Foreign Language (EFL) education, particularly in the ways learners access information, interact with learning resources, and participate in language-learning activities (Eroglu et al., 2026). Applications such as ChatGPT and other generative AI platforms have created new opportunities for personalized learning, interactive communication, immediate feedback, and autonomous language practice. Through these technologies, learners can generate ideas, develop vocabulary, revise written texts, practice speaking, and explore language-related concepts beyond conventional classroom settings (Min et al., 2026). Unlike traditional digital learning resources, GenAI enables dynamic interactions in which learners can formulate prompts, receive context-sensitive responses, request clarification, and refine their understanding through repeated exchanges. These affordances have expanded opportunities for learner participation and interaction in EFL education (C. T. Li et al., 2024). Nevertheless, the increasing integration of GenAI also raises important questions about how learners engage with these technologies and whether frequent AI interaction translates into meaningful involvement in the language-learning process.

Student engagement is widely recognized as a multidimensional construct that reflects learners' active participation, cognitive investment, and emotional involvement in educational activities (Moreira et al., 2020). In EFL education, engagement is particularly important because language development requires continuous practice, interaction, motivation, and sustained effort. Student engagement is commonly examined through behavioral, cognitive, and emotional dimensions (Moreira et al., 2020). Behavioral engagement concerns learners' participation, effort, persistence, and involvement in learning tasks. Cognitive engagement refers to learners' mental investment in understanding, processing, evaluating, and applying knowledge, including critical thinking and self-regulated learning. Emotional engagement encompasses learners' interest, enjoyment, confidence, motivation, and affective responses toward learning experiences. These dimensions are interconnected and provide a comprehensive perspective for understanding learners' involvement in educational activities (Daniels et al., 2015). In GenAI-supported EFL learning, however, engagement becomes increasingly complex because learners interact not only with teachers, peers, and instructional materials but also with AI systems that provide continuous feedback, personalized assistance, and interactive learning opportunities.

One important aspect of student engagement in GenAI-supported EFL education concerns behavioral engagement and learner interaction. Generative AI provides opportunities for learners to participate in language-learning activities through repeated interaction, simulated conversations, writing revision, vocabulary development, and immediate feedback (Mekheimer, 2025). Such affordances may encourage learners to participate more actively, particularly by reducing barriers to communication and providing opportunities for independent language practice. Previous research by Zhou and Hou (2024) demonstrated that EFL learners frequently used AI applications for translation, assignment completion, summarization, and simulated speaking practice. Similarly, Jahan and Akbar (2026) found that Omani EFL learners perceived ChatGPT positively in supporting classroom participation, writing development, and speaking practice. However, frequent interaction

with AI does not necessarily indicate meaningful behavioral engagement. Learners may use AI primarily to obtain direct answers or complete assignments without making substantial contributions to the learning process (Joel et al., 2024). Therefore, understanding behavioral engagement requires examining not only the frequency of AI use but also the quality of learners' participation, interaction patterns, task persistence, and independent contributions.

Beyond observable participation, engagement in GenAI-supported EFL learning also involves cognitive processes, AI learning self-efficacy, and critical thinking. Personalized assistance and immediate feedback may facilitate learners' information processing, knowledge construction, problem-solving, and reflective learning. Zhang et al. (2025) demonstrated that AI learning self-efficacy significantly predicted engagement among undergraduate EFL learners, highlighting the importance of learners' confidence in interacting with generative AI. Their findings also indicated that AI trust and personalization contributed to learners' engagement through psychological mechanisms associated with confidence and perceived technological support (Jiang, 2026). Nevertheless, the increasing availability of AI-generated information raises concerns about learners' intellectual autonomy and critical thinking. Although GenAI can support learners in exploring ideas and evaluating language choices, excessive dependence may reduce opportunities for independent reasoning and decision-making. Consequently, cognitive engagement involves not merely interacting with AI but also questioning, evaluating, verifying, and selectively integrating AI-generated information into learners' own understanding and language production (Zhang & Han, 2025).

Emotional engagement, motivation, and psychological experiences constitute another important dimension of student engagement in AI-assisted EFL learning. Personalized assistance, immediate feedback, and non-judgmental interaction may create supportive learning environments that strengthen learners' confidence, enjoyment, interest, and willingness to communicate in English. Jahan and Akbar (2026) reported that learners developed greater confidence and more positive perceptions of ChatGPT following structured training in prompt generation and responsible AI use. Similarly, Zhou and Hou (2024) identified generally positive emotional responses toward AI integration among EFL teachers and learners. However, learners' psychological experiences are not exclusively positive. Concerns about excessive dependence, uncertainty, declining motivation, and changes in teacher–student relationships may influence their willingness to sustain engagement (Zhang & Han, 2025). Emotional experiences such as pride and shame may also shape learners' participation and commitment to English learning. Thus, examining emotional engagement requires considering both the positive experiences facilitated by GenAI and the psychological challenges that may constrain learners' motivation and continued involvement.

Furthermore, student engagement in AI-mediated EFL learning is influenced by pedagogical, interpersonal, and ethical factors. The effectiveness of GenAI integration depends not only on its technological capabilities but also on instructional guidance, teacher–student relationships, and responsible AI practices (Tang et al., 2025). Pedagogical support, including structured AI training, effective prompt generation, personalized learning activities, and guided feedback, can help learners use AI more purposefully. Interpersonal factors, particularly teacher immediacy, rapport, empathy, and supportive communication, remain essential in maintaining meaningful human interaction and learners' sense of belonging. Li et al. (2025) demonstrated that teacher immediacy and

teacher–student rapport significantly predicted student engagement in AI-mediated EFL education. At the same time, ethical considerations have become increasingly important because learners may encounter challenges related to plagiarism, academic integrity, information accuracy, and excessive reliance on AI-generated content (Ciampi et al., 2025). Responsible AI use therefore requires learners to verify information, recognize technological limitations, and maintain responsibility for their own learning. These considerations suggest that meaningful engagement in AI-mediated EFL education is shaped by the interaction between technological affordances, instructional practices, interpersonal support, and ethical awareness.

Despite the growing interest in generative AI in language education, existing empirical research provides fragmented insights into the different dimensions and influencing factors of student engagement. Some studies have focused on behavioral engagement and learner interaction, while others have examined cognitive processes, AI learning self-efficacy, and critical thinking. Additional investigations have explored emotional engagement, motivation, and psychological experiences, as well as pedagogical, interpersonal, and ethical conditions influencing learners' participation. Although these studies provide valuable contributions, their findings are distributed across different conceptual and empirical perspectives. Consequently, a comprehensive understanding of how these dimensions interact in shaping student engagement in GenAI-supported EFL learning remains insufficiently developed. In particular, the relationship between learners' interaction patterns, cognitive and emotional experiences, and the pedagogical and ethical conditions surrounding AI use requires further systematic examination. Synthesizing these perspectives is therefore necessary to identify the opportunities, challenges, and underlying factors associated with meaningful engagement in generative AI-supported language learning.

To address this gap, the present study conducts a systematic literature review entitled *Exploring Student Engagement with Generative AI in EFL Education: A Systematic Literature Review*. The review aims to synthesize empirical research on student engagement in GenAI-supported EFL learning by examining four interconnected themes: (1) AI-mediated behavioral engagement and learner interaction; (2) cognitive engagement, AI learning self-efficacy, and critical thinking; (3) emotional engagement, motivation, and psychological experiences; and (4) pedagogical, interpersonal, and ethical factors shaping engagement in AI-mediated EFL learning. By integrating these perspectives, this review seeks to provide a comprehensive understanding of how student engagement is manifested and shaped in generative AI-supported language education. The findings are expected to contribute to the theoretical understanding of student engagement and provide pedagogical implications for designing AI-supported EFL learning environments that promote active participation, cognitive autonomy, positive emotional experiences, meaningful human interaction, and responsible AI use.

Accordingly, this systematic literature review addresses the following research questions:

1. How is student engagement manifested through behavioral interaction in generative AI-supported EFL learning?
2. How do cognitive engagement, AI learning self-efficacy, and critical thinking shape learners' engagement in generative AI-supported EFL learning?
3. How do emotional engagement, motivation, and psychological experiences influence learners'

engagement in generative AI-supported EFL learning?

4. What pedagogical, interpersonal, and ethical factors facilitate or constrain student engagement in generative AI-supported EFL learning?

Method

Research Design

This study employed a qualitative Systematic Literature Review (SLR) design to examine how student engagement has been conceptualized, investigated, and understood in the context of generative artificial intelligence (GenAI)-supported English as a Foreign Language (EFL) education. The systematic review approach was selected to identify, analyze, and synthesize existing empirical research concerning the ways learners engage with GenAI in language-learning activities, as well as the factors that facilitate or constrain such engagement. Rather than examining individual studies in isolation, the review aimed to identify recurring patterns, relationships, differences, and research gaps across the selected literature.

A qualitative synthesis was considered appropriate because student engagement in GenAI-supported EFL learning is a multidimensional construct involving behavioral participation, cognitive investment, and emotional involvement. Furthermore, engagement with generative AI is influenced by learners' psychological beliefs, including AI trust and AI learning self-efficacy, as well as their capacity for critical thinking and independent learning. It is also shaped by pedagogical practices, teacher–student relationships, and ethical considerations associated with AI use. Accordingly, this review sought to develop an integrated understanding of student engagement by examining both learners' interactions with GenAI technologies and the broader educational conditions that influence their engagement.

2.2 Data Sources and Search Strategy

The review focused on empirical studies published between 2024 and 2026 that investigated student engagement, AI-mediated learning, or the use of generative AI in EFL education. This publication period was selected to capture recent developments in the integration of GenAI into language education and the growing research interest in its relationship with learners' behavioral, cognitive, and emotional engagement. The review primarily considered studies involving EFL learners and examined the role of generative AI in language-learning activities, psychological processes, and classroom engagement.

2.3 Inclusion and Exclusion Criteria

To ensure the relevance of the selected literature, the review applied criteria related to the research focus, educational context, participant characteristics, and contribution to understanding student engagement in AI-supported EFL learning.

Inclusion Criteria

Studies were considered relevant when they met the following criteria:

1. They investigated student engagement in EFL education or English language learning contexts involving generative AI or AI-mediated learning.
2. They examined EFL learners or other relevant educational participants whose findings provided insights into student engagement in AI-supported language learning.
3. They addressed at least one dimension of student engagement, including behavioral engagement, cognitive engagement, or emotional engagement.

4. They examined factors associated with engagement, such as AI trust, AI learning self-efficacy, critical thinking, motivation, psychological experiences, pedagogical support, teacher–student relationships, or ethical AI use.
5. They reported empirical findings or substantive analyses relevant to the research questions.
6. They were published within the review period of 2024–2026 and provided sufficient information to support qualitative analysis and cross-study synthesis.

Studies examining general EFL engagement without a direct focus on generative AI were considered only when their findings provided relevant contextual or theoretical insights into engagement-related factors, particularly emotional experiences and classroom relationships. Their findings were distinguished from direct evidence concerning GenAI-supported learning.

Exclusion Criteria

Studies were considered outside the scope of the review when they:

1. Did not address student engagement or related psychological, cognitive, behavioral, or emotional factors in EFL education.
2. Focused exclusively on general technology integration without examining its relationship with learner engagement or relevant engagement-related factors.
3. Examined AI applications in educational contexts unrelated to English language learning.
4. Did not provide empirical findings or substantive discussions relevant to the research questions.
5. Lacked sufficient methodological or analytical information to support the review.
6. Were published outside the specified publication period.

The final manuscript should also specify the publication types, language requirements, and peer-review criteria actually applied during article selection.

2.4 Data Collection Procedures

The data collection process focused on identifying studies that addressed the research objectives and provided evidence concerning student engagement in GenAI-supported EFL education. The review corpus presented in the current synthesis comprised six studies published between 2024 and 2026: Jahan and Akbar (2026), Guo et al. (2026), Zhang et al. (2025), Li et al. (2025), Ma and Chen (2024), and Zhou and Hou (2024).

These studies represented different research contexts and investigated various aspects of engagement in AI-supported or EFL learning environments. Their research focuses included learners' perceptions of ChatGPT, AI trust and learning self-efficacy, behavioral, cognitive, and emotional engagement, teacher immediacy and rapport, and the psychological and ethical dimensions of AI integration. The studies also provided different types of evidence, including quantitative findings, qualitative insights, and analyses of relationships among engagement-related variables.

For analytical purposes, information from the selected studies was organized according to six dimensions:

1. Research context: The geographical, institutional, and educational settings in which student engagement and AI-supported EFL learning were investigated.
2. Research participants: The characteristics of the participants, including EFL learners, their educational levels, and other relevant participant groups.
3. Research focus: The primary objectives and research issues examined in each study, particularly their relationship with GenAI and student engagement.
4. Dimensions of student engagement: The specific aspects of engagement investigated, including behavioral participation, cognitive investment, emotional involvement, and related psychological constructs.
5. Factors influencing engagement: The technological, psychological, pedagogical, interpersonal, and ethical factors identified as facilitating or constraining student engagement.
6. Research methodology: The research designs, data collection instruments, analytical approaches, and methods used to investigate engagement.

These dimensions provided a common analytical framework for organizing the evidence, comparing the selected studies, and identifying similarities, differences, and emerging patterns across the literature.

2.5 Data Analysis

The selected studies were analyzed using qualitative content analysis to identify and synthesize findings related to student engagement in GenAI-supported EFL education. This approach enabled the researcher to examine the reported findings systematically and organize them into thematic categories aligned with the research questions.

The analysis involved three interconnected activities. First, the researcher examined the research context, participant characteristics, research focus, dimensions of engagement, influencing factors, and methodological approaches reported in each study. Second, the findings were compared across studies to identify recurring patterns, conceptual relationships, and differences in how student engagement was understood and investigated. Third, the findings were synthesized and interpreted to develop broader themes representing the main dimensions and influencing factors of student engagement in AI-supported EFL learning.

The thematic synthesis was organized around four principal themes:

1. AI-Mediated Behavioral Engagement and Learner Interaction: This theme examined how learners participate in AI-supported activities, interact with generative AI systems, use AI-generated feedback, and engage in language-learning tasks. Particular attention was given to the distinction between the frequency of AI interaction and meaningful behavioral participation.

2. Cognitive Engagement, AI Learning Self-Efficacy, and Critical Thinking: This theme explored how learners' confidence in using AI, trust in AI systems, and cognitive investment influence their engagement. It also examined the role of critical thinking in questioning, evaluating, verifying, and selectively integrating AI-generated information into language-learning activities.

3. Emotional Engagement, Motivation, and Psychological Experiences in AI-Assisted EFL Learning: This theme focused on learners' emotional and psychological responses to AI-supported language learning, including

confidence, enjoyment, positive attitudes, motivation, anxiety, uncertainty, and concerns about excessive dependence on AI. It also considered how interpersonal support and classroom experiences contribute to learners' emotional involvement.

4. Pedagogical, Interpersonal, and Ethical Factors Shaping Engagement in AI-Mediated EFL Learning: This theme examined the instructional, social, and ethical conditions influencing student engagement. It included structured AI training, prompt-generation strategies, personalized learning activities, teacher immediacy, teacher–student rapport, academic integrity, information verification, and responsible AI use.

Cross-study synthesis was subsequently used to examine the relationships among these four themes. Particular attention was given to the interaction between technological affordances and learners' behavioral participation, the role of psychological mechanisms in supporting cognitive and emotional engagement, and the importance of pedagogical guidance, interpersonal relationships, and ethical awareness in promoting meaningful AI-supported learning.

The analysis also considered the limitations and challenges identified across the studies, particularly the potential gap between frequent AI interaction and meaningful learning participation, the risk of excessive dependence on AI-generated responses, and the need to maintain learners' critical thinking and independent decision-making. Findings from studies examining general EFL engagement without a direct GenAI focus were interpreted as contextual evidence rather than direct evidence of the effects of generative AI.

2.6 Trustworthiness of the Study

The trustworthiness of this systematic literature review was supported through the use of predefined inclusion and exclusion criteria, a consistent analytical framework, and systematic comparisons of findings across the selected studies. The six analytical dimensions used during data collection provided a structured basis for examining the research context, participants, research focus, engagement dimensions, influencing factors, and methodological approaches of each study.

In addition, the four thematic categories provided a consistent framework for organizing and interpreting the findings. Cross-study comparison was used to distinguish recurring patterns from context-specific results and to identify both convergent and contrasting evidence. For example, the review considered the distinction between frequent interaction with AI and meaningful behavioral engagement, the contribution of AI trust and learning self-efficacy to cognitive engagement, and the influence of teacher–student relationships on learners' emotional involvement. The synthesis also distinguished direct findings from GenAI-related studies from contextual insights obtained from broader EFL engagement research.

To strengthen methodological transparency, the final review should report the databases used, the complete search strings, the dates of the searches, the number of records retrieved, the procedures for removing duplicates, and the screening and eligibility decisions. The reasons for excluding studies should also be documented. Where applicable, independent checking of study selection and thematic coding would further strengthen the credibility and consistency of the review.

Overall, this methodology provides a structured basis for synthesizing existing research on student engagement in GenAI-supported EFL education. By examining behavioral, cognitive, and emotional engagement alongside pedagogical, interpersonal, and ethical factors, the review seeks to develop a comprehensive understanding

of how learners engage with generative AI and the conditions necessary to promote active participation, critical thinking, learner autonomy, positive psychological experiences, and responsible AI use.

Results and Discussion

The reviewed studies indicate that student engagement has become an increasingly important dimension of generative AI-supported EFL education, extending beyond the frequency of interaction with AI tools to encompass behavioral participation, cognitive investment, emotional involvement, and learners' critical engagement with AI-generated content. Across different educational contexts and participant groups, the findings reveal generally positive perceptions of generative AI in supporting language learning, facilitating interaction, enhancing learning confidence, and providing personalized assistance. However, the studies also highlight persistent challenges related to excessive dependence on AI, reduced independent thinking, information accuracy, declining motivation, and ethical concerns. Furthermore, the findings demonstrate that meaningful student engagement is influenced not only by the technological affordances of generative AI but also by learners' AI trust, learning self-efficacy, critical thinking, emotional experiences, pedagogical guidance, teacher–student relationships, and ethical awareness. Based on these findings, the results and discussion are synthesized according to four interrelated themes: AI-mediated behavioral engagement and learner interaction; cognitive engagement, AI learning self-efficacy, and critical thinking; emotional engagement, motivation, and psychological experiences in AI-assisted EFL learning; and pedagogical, interpersonal, and ethical factors shaping engagement in AI-mediated EFL learning.

Table 1. Research Result

Article Title (Author)	Research Focus
Exploring ChatGPT in EFL classrooms: insights into engagement, proficiency and ethics (Jahan & Akbar, 2026)	This study focuses on investigating Omani EFL learners' perceptions of ChatGPT integration in English language classrooms, particularly its perceived effectiveness in improving writing and speaking skills, enhancing classroom engagement, and promoting ethical awareness through structured training in prompt generation and responsible AI use.
Pride and Shame in English Learning: Mediating the Relationship Between Classroom Environment and English Learning Engagement (Guo et al., 2026)	This study focuses on examining how different dimensions of the classroom environment (teacher support, student cohesiveness, and task orientation) influence Chinese senior high school EFL learners' English learning engagement, particularly investigating the

	mediating roles of language pride and language shame based on Control-Value Theory (CVT).
Uncovering the Mediating Effects of AI Trust and Self-Efficacy on Engagement in Human-GenAI Communication for EFL Learning (Zhang et al., 2025)	This study focuses on examining how the responsiveness and personalization features of Generative Artificial Intelligence (GenAI) influence EFL learners' engagement in human–GenAI communication, particularly investigating the mediating roles of AI trust and AI learning self-efficacy through the Stimulus–Organism–Response (S-O-R) theoretical framework.
The Role of Chinese EFL Teachers' Immediacy and Rapport in Students' Engagement in the Context of AI-Mediated Education (C. Li et al., 2025)	This study focuses on examining the relationships between Chinese EFL teachers' immediacy and teacher–student rapport and students' engagement in AI-mediated English language learning, particularly investigating the extent to which teachers' interpersonal

	communication behaviors predict learners' behavioral, emotional, and cognitive engagement.
AI-empowered applications effects on EFL learners' engagement in the classroom and academic procrastination (Ma & Chen, 2024)	This study focuses on exploring Omani B2-level EFL learners' perceptions of ChatGPT integration in English language classrooms, particularly its effectiveness in supporting writing and speaking proficiency, enhancing classroom engagement, and promoting ethical AI awareness through structured training in prompt generation and responsible AI use
Can AI Empower L2 Education? Exploring Its Influence on the Behavioural, Cognitive and Emotional Engagement of EFL Teachers and Language Learners (Zhou & Hou, 2024)	This study focuses on exploring how artificial intelligence influences the behavioral, cognitive, and emotional engagement of EFL teachers and language learners in second language (L2) education, particularly examining patterns of AI use, its perceived

	effectiveness in teaching and learning, and the opportunities and challenges associated with AI integration.

The article titled "Exploring ChatGPT in EFL classrooms: insights into engagement, proficiency and ethics " by Jahan & Akbar, 2026) investigated Omani EFL learners' perceptions of ChatGPT integration in English language classrooms, particularly its perceived effectiveness in improving writing and speaking skills, enhancing classroom engagement, and promoting ethical awareness through structured training in prompt generation and responsible AI use. The findings revealed that Omani EFL learners generally held positive perceptions of ChatGPT as a tool for supporting English language learning, particularly in improving writing and speaking skills and enhancing classroom engagement. Quantitative results from 30 B2-level students showed that perceived writing performance ($M = 3.644$), speaking performance ($M = 3.929$), and classroom engagement ($M = 4.278$) were significantly higher than the neutral midpoint of the scale ($p < .001$). Classroom engagement received the highest mean score, suggesting that learners particularly valued ChatGPT's potential to facilitate active participation and personalized learning experiences. Qualitative findings further demonstrated a shift from initial skepticism to greater acceptance following structured training in prompt generation and ethical AI use. Students perceived ChatGPT as a personal tutor that provided immediate feedback, supported vocabulary development, facilitated writing revision, and offered opportunities for conversational practice in a non-judgmental environment. The use of ChatGPT also increased learners' confidence and encouraged critical thinking; however, some participants expressed concerns about overreliance, reduced independent thinking, plagiarism, academic fairness, and unclear institutional policies. Importantly, the study found no statistically significant gender differences in learners' perceptions of ChatGPT's effectiveness for writing, speaking, or classroom engagement. The discussion emphasizes that successful AI integration requires structured training, effective prompt-generation strategies, verification of AI-generated content, and clear institutional guidelines. Overall, the findings suggest that ChatGPT can serve as a complementary learning tool that supports language development and learner engagement when its use is guided by ethical awareness, teacher mediation, and a balance between technological assistance and independent learning.

The study entitled "Pride and Shame in English Learning: Mediating the Relationship Between Classroom Environment and English Learning Engagement" by Guo et al., (2026) scrutinized how different dimensions of the classroom environment (teacher support, student cohesiveness, and task orientation) influence Chinese senior high school EFL learners' English learning engagement, particularly investigating the mediating roles of language pride and language shame based on Control-Value Theory (CVT). The findings revealed that classroom environment significantly influenced English learning engagement among 365 Chinese senior high school EFL students, with teacher support ($\beta = 0.30$, $p < .001$), task orientation ($\beta = 0.26$, $p < .001$), and student cohesiveness ($\beta = 0.24$, $p < .001$) all positively predicting learners' engagement. Among these factors, teacher support emerged as the strongest predictor, highlighting the importance of teachers' academic, emotional, and interpersonal support in encouraging students' active participation and commitment to English

learning. Regarding emotional factors, language pride positively predicted L2 engagement (β = 0.27, $p < .001$), whereas language shame negatively predicted engagement ($\beta = -0.19$, $p < .001$). The mediation analysis further demonstrated that language pride partially mediated the relationship between teacher support and L2 engagement, while language shame mediated the relationship between student cohesiveness and L2 engagement. However, neither pride nor shame mediated the relationship between task orientation and engagement. These findings suggest that supportive teacher–student relationships can foster learners' sense of achievement and pride, thereby strengthening their engagement, while positive peer relationships can reduce feelings of shame and its negative effects on participation and learning. Interestingly, despite cultural perspectives in China that sometimes associate shame with self-improvement and pride with complacency, the results indicated that pride functioned as a positive emotional resource, whereas shame was associated with lower engagement. The discussion emphasizes the importance of creating psychologically safe and inclusive EFL classrooms through supportive teacher feedback, collaborative learning, peer cooperation, and recognition of students' efforts. Overall, the study highlights that English learning engagement is shaped not only by classroom instructional conditions but also by learners' retrospective emotional experiences, demonstrating the mediating roles of language pride and shame in connecting classroom environment with behavioral, cognitive, and emotional engagement.

Research conducted by Q. Zhang et al., 2025) discuses "Uncovering the Mediating Effects of AI Trust and Self-Efficacy on Engagement in Human-GenAI Communication for EFL Learning". The findings revealed that the responsiveness and personalization of Generative Artificial Intelligence (GenAI) significantly influenced AI trust, AI learning self-efficacy, and learning engagement among 697 undergraduate EFL learners from four universities in China. Based on Structural Equation Modeling (SEM), AI responsiveness positively predicted learners' trust in AI (β = 0.153, $p = 0.001$) and AI learning self-efficacy (β = 0.114, $p = 0.016$), while personalization demonstrated stronger positive effects on AI trust ($\beta = 0.408$, $p < .001$) and self-efficacy (β = 0.174, $p = 0.001$). Furthermore, AI trust positively influenced learning engagement (β = 0.162, $p < .001$) and self-efficacy ($\beta = 0.302$, $p < .001$), while AI learning self-efficacy emerged as a strong predictor of engagement ($\beta = 0.390$, $p < .001$). A key finding was that AI responsiveness did not directly influence learning engagement ($\beta = 0.041$, $p = 0.360$), indicating that its effect was fully mediated by AI trust and self-efficacy. In contrast, personalization had both a significant direct effect ($\beta = 0.264$, $p < .001$) and indirect effects through AI trust and self-efficacy, suggesting partial mediation. The model explained 45% of the variance in AI-assisted learning engagement ($R^2 = 0.45$). These findings, interpreted through the Stimulus–Organism–Response (S-O-R) framework, suggest that technological features alone are insufficient to generate meaningful learner engagement; rather, learners' psychological responses, particularly trust in AI and confidence in using AI tools, play essential mediating roles. Personalization appears particularly important because it addresses individual learning needs and enhances learners' sense of autonomy and control, whereas responsiveness strengthens engagement primarily by building trust and confidence. The discussion therefore emphasizes that educators and institutions should promote strategic human–GenAI interaction through personalized learning activities, prompt-engineering instruction, critical evaluation of AI-generated feedback, and opportunities to develop learners' confidence in using AI

independently. Overall, the study demonstrates that meaningful engagement in AI-mediated EFL learning depends not only on the technological capabilities of GenAI but also on the psychological mechanisms that shape learners' trust, self-efficacy, and active participation.

Research conducted by Li et al., (2025) discussed "The Role of Chinese EFL Teachers' Immediacy and Rapport in Students' Engagement in the Context of AI-Mediated Education". The findings revealed that Chinese EFL teachers' immediacy and teacher–student rapport significantly and positively influenced students' engagement in AI-mediated English language learning. Based on data from 513 Chinese EFL learners, teacher immediacy was positively correlated with student engagement ($r = 0.57$, $p < 0.01$), while teacher–student rapport demonstrated a stronger correlation ($r = 0.65$, $p < 0.01$). Structural equation modeling confirmed that both teacher immediacy ($\beta = 0.30$, $p < 0.001$) and teacher rapport ($\beta = 0.35$, $p < 0.001$) significantly predicted student engagement, while teacher immediacy also positively predicted teacher rapport ($\beta = 0.62$, $p < 0.001$). Furthermore, regression analysis indicated that these two interpersonal factors explained 53% of the variance in student engagement ($R^2 = 0.53$). Descriptive findings showed that non-verbal immediacy ($M = 3.91$) was rated higher than verbal immediacy ($M = 3.65$), while behavioral engagement ($M = 3.90$) was the highest engagement dimension, followed by cognitive engagement ($M = 3.88$) and emotional engagement ($M = 3.75$). The discussion emphasizes that teachers' interpersonal communication behaviors, including eye contact, gestures, empathy, mutual understanding, and supportive relationships, remain essential for fostering learners' engagement in AI-mediated classrooms. Interpreted through Self-Determination Theory (SDT) and the Technology Acceptance Model (TAM), the findings suggest that positive teacher–student relationships strengthen learners' sense of relatedness and support their acceptance of AI-assisted learning. Therefore, AI integration should not diminish the teacher's role; rather, teachers need to maintain meaningful interpersonal interactions, provide emotional support, and create an inclusive learning environment to encourage students' active participation. The study recommends strengthening teachers' verbal and non-verbal immediacy through professional development, while future research should employ mixed-methods and longitudinal designs and incorporate both teacher and student perspectives to gain a deeper understanding of engagement in AI-mediated EFL learning.

Research conducted by Ma and Chen (2024) discussed "AI-Learner Partnership': Psychological mechanisms and developmental trajectories of EFL learners' writing agency in GenAI-assisted courses". The findings revealed that Omani B2-level EFL learners generally held positive perceptions of ChatGPT as a supportive tool for English language learning, particularly in improving writing and speaking skills and enhancing classroom engagement. Quantitative results from 30 students demonstrated that perceived writing performance ($M = 3.644$), speaking performance ($M = 3.929$), and classroom engagement ($M = 4.278$) were significantly higher than the neutral midpoint of the scale ($p < .001$), with classroom engagement receiving the highest mean score. Qualitative findings further indicated a shift from initial skepticism toward greater acceptance of ChatGPT following structured training in prompt generation and ethical AI use. Students perceived ChatGPT as a personal tutor that provided immediate feedback, corrected grammatical errors, enriched vocabulary, supported writing revision, and facilitated speaking practice through simulated conversations. The findings also highlighted

psychological benefits, particularly increased confidence, reduced anxiety, and opportunities to develop critical thinking. However, some learners expressed concerns about excessive dependence on AI, reduced independent thinking, plagiarism, academic fairness, and uncertainty regarding institutional policies on AI use. Furthermore, the study found no statistically significant gender differences in learners' perceptions of ChatGPT's effectiveness in writing, speaking, or classroom engagement. The discussion emphasizes that structured training in prompt generation, verification of AI-generated information, and ethical awareness are essential for responsible AI integration. The authors also propose the Responsible GenAI Adoption Cycle (RGAC), consisting of four stages: guided exposure, ethical awareness, critical application, and autonomous responsible use. Overall, the study suggests that ChatGPT can support EFL learners' language development and classroom engagement when integrated as a complementary learning tool through appropriate teacher guidance, clear institutional policies, and a balance between AI assistance and independent learning.

Previous research conducted by Zhou and Hou (2024) discussed "Can AI Empower L2 Education? Exploring Its Influence on the Behavioural, Cognitive and Emotional Engagement of EFL Teachers and Language Learners". The findings revealed that artificial intelligence (AI) positively influenced the behavioral, cognitive, and emotional engagement of EFL teachers and language learners in L2 education. Based on semi-structured interviews with 24 Chinese EFL teachers and 38 language learners, the study found that 67% of teachers and 74% of learners frequently used AI tools, particularly ChatGPT, Wenxin Yiyuan, DeepL Translation, and Baidu Translation. Regarding behavioral engagement, teachers primarily employed AI for preparing teaching materials, grading assignments, and translation, whereas learners used it for translating texts, completing assignments, summarizing concepts, and practicing speaking through simulated IELTS conversations. In terms of cognitive engagement, 79% of teachers perceived AI as beneficial for reducing teaching workloads, improving instructional efficiency, and enriching learning materials, while 94.7% of learners reported improved learning efficiency. Furthermore, 91.7% of teachers and 92% of learners expressed confidence in AI integration in L2 education, particularly because of its capacity to provide personalized guidance and learning support. However, participants also identified challenges, including inaccurate translations, outdated information, excessive dependence on AI, and the potential reduction of independent thinking. Regarding emotional engagement, positive attitudes toward AI were reported by 96% of teachers and 81.6% of learners, while most participants indicated that AI did not negatively affect their enthusiasm for teaching and learning. Nevertheless, some teachers expressed concerns about potential job displacement, while learners raised concerns about declining motivation and changes in teacher–student relationships. The discussion highlights that AI can enhance engagement by facilitating learning activities, supporting cognitive processes, and providing personalized learning experiences; however, its effectiveness depends on responsible implementation and appropriate human guidance. The study emphasizes that teachers should use AI as a complementary instructional tool rather than a replacement for human interaction, while learners should be encouraged to critically evaluate AI-generated information and maintain independent thinking. Overall, the findings demonstrate that AI has considerable potential to strengthen multidimensional engagement in EFL education, although ethical awareness, teacher preparedness, technological accuracy, and balanced AI use remain essential for sustainable

integration.

AI-Mediated Behavioral Engagement and Learner Interaction

Behavioral engagement refers to the observable involvement of learners in learning activities, including their participation, effort, persistence, task completion, and interaction with learning resources. In AI-mediated EFL learning, behavioral engagement can be reflected in students' frequency of interaction with AI tools, their active participation in AI-supported learning tasks, and their willingness to use AI-generated feedback to improve their language performance. The reviewed studies suggest that generative AI provides new opportunities for behavioral engagement by enabling learners to interact with digital learning environments, obtain immediate responses, and participate in language-learning activities beyond conventional classroom interactions.

Jahan and Akbar (2026) found that ChatGPT integration was associated with a high level of classroom engagement among Omani EFL learners. Their quantitative findings indicated that classroom engagement received the highest mean score (M = 4.278), compared with perceived improvements in writing performance (M = 3.644) and speaking performance (M = 3.929). These findings suggest that learners perceived ChatGPT not merely as a language-support tool but also as an interactive learning resource that encouraged their participation in classroom activities. The qualitative findings further indicated that students used ChatGPT to generate ideas, receive immediate feedback, revise written texts, develop vocabulary, and simulate conversations. Such affordances may encourage learners to participate more actively because they can obtain assistance when needed and engage in language practice without always depending on direct teacher intervention.

Similarly, Zhou and Hou (2024) reported that both EFL teachers and learners frequently incorporated AI tools into their educational activities. Approximately 67% of teachers and 74% of learners reported frequent AI use. Learners employed tools such as ChatGPT, Wenxin Yiyuan, DeepL Translation, and Baidu Translation to support translation, assignment completion, summarization, and simulated IELTS speaking practice. These findings demonstrate that AI-mediated engagement extends beyond a single learning activity. Instead, learners interact with AI across different language-learning tasks and use its functionalities to support their academic participation. In particular, simulated speaking activities provide opportunities for learners to practise language production through repeated interaction, potentially increasing their willingness to engage in communicative activities.

Nevertheless, frequent interaction with AI tools should not automatically be interpreted as meaningful behavioral engagement. The number of interactions or frequency of AI use does not necessarily indicate that learners are actively processing information or making substantial efforts to improve their language abilities. For example, students may use AI primarily to obtain direct answers, translate texts, or complete assignments without engaging deeply with the learning process. Therefore, behavioral engagement in AI-mediated EFL learning needs to be examined not only through the frequency of technology use but also through the quality of learners' participation, persistence in completing tasks, and active involvement in language-learning activities.

An important distinction emerging from these findings concerns the relationship between AI accessibility and learner participation. AI tools provide immediate responses and continuous opportunities for interaction, which may reduce barriers to participation, particularly

for learners who experience difficulties initiating communication in English. However, the educational value of such interaction depends on how learners use AI-generated responses. When learners actively formulate prompts, request clarification, revise their outputs, and engage in repeated language practice, AI interaction may support more sustained behavioral engagement. Conversely, when learners rely on AI to produce complete answers without further involvement, frequent use may represent technological dependence rather than active learning participation.

Overall, the reviewed evidence indicates that generative AI can create additional opportunities for behavioral engagement by facilitating immediate interaction, supporting language practice, and expanding access to learning resources. However, the relationship between AI use and behavioral engagement is not necessarily straightforward. The quality of engagement depends on learners' active participation and the extent to which AI-supported activities require meaningful involvement. This suggests that future research should move beyond measuring the frequency of AI use and investigate more specific behavioral indicators, such as prompt development, interaction patterns, revision activities, task persistence, and learners' independent contributions during AI-assisted language learning.

Cognitive Engagement, AI Learning Self-Efficacy, and Critical Thinking

Cognitive engagement, AI learning self-efficacy, and critical thinking represent important psychological and cognitive dimensions that shape how EFL learners interact with artificial intelligence (AI) in language learning. Previous studies suggest that AI-supported learning can facilitate learners' cognitive engagement by providing personalized assistance, immediate feedback, and opportunities to explore language-related problems. However, meaningful cognitive engagement does not automatically result from AI integration; rather, it depends on learners' confidence in using AI tools, their ability to evaluate AI-generated information, and their willingness to maintain independent thinking.

A particularly relevant study by Zhang et al. (2025), entitled Uncovering the Mediating Effects of AI Trust and Self-Efficacy on Engagement in Human-GenAI Communication for EFL Learning, investigated the relationships among AI responsiveness, personalization, AI trust, AI learning self-efficacy, and learning engagement among 697 undergraduate EFL learners in China. The findings demonstrated that AI learning self-efficacy was a significant predictor of learning engagement ($\beta = 0.390$, $p < .001$). Furthermore, AI trust positively influenced both learning engagement ($\beta = 0.162$, $p < .001$) and AI learning self-efficacy ($\beta = 0.302$, $p < .001$). The study also revealed that AI personalization had a significant direct effect on engagement ($\beta = 0.264$, $p < .001$), while AI responsiveness influenced engagement indirectly through AI trust and self-efficacy. These findings indicate that learners who feel confident in interacting with AI tools are more likely to engage actively in AI-assisted learning activities. The study highlights that AI learning self-efficacy functions as an important psychological mechanism connecting technological features with learners' engagement. Therefore, developing learners' confidence in using AI, providing personalized learning experiences, and encouraging strategic interaction with GenAI are essential for promoting meaningful engagement in EFL learning.

Similarly, Zhou and Hou (2024), in their study Can AI Empower L2 Education? Exploring Its Influence on the Behavioural, Cognitive and Emotional Engagement of EFL

Teachers and Language Learners, explored how AI influences three dimensions of engagement: behavioral, cognitive, and emotional engagement. Drawing on interviews with 24 Chinese EFL teachers and 38 language learners, the findings indicated that AI contributed positively to cognitive engagement by improving learning efficiency, facilitating access to information, and providing personalized learning support. Notably, 94.7% of learners reported improvements in learning efficiency, while 92% expressed confidence in AI integration in L2 education. From a cognitive perspective, AI-supported activities enabled learners to summarize concepts, translate texts, complete assignments, and practice speaking through simulated conversations. Nevertheless, participants also identified potential limitations, particularly inaccurate information, excessive dependence on AI, and reduced opportunities for independent thinking. These findings suggest that although AI can facilitate cognitive engagement by supporting information processing and knowledge construction, learners still need to develop the ability to evaluate AI-generated information critically rather than accepting its responses without reflection.

The relationship between AI-assisted learning and critical thinking is also evident in the study by Jahan and Akbar (2026), entitled Exploring ChatGPT in EFL Classrooms: Insights into Engagement, Proficiency and Ethics. The study investigated Omani EFL learners' perceptions of ChatGPT integration, including its contribution to language proficiency, classroom engagement, and ethical awareness. The findings indicated that ChatGPT increased learners' confidence and encouraged critical thinking through immediate feedback, vocabulary development, writing revision, and conversational practice. Quantitative findings showed that classroom engagement obtained the highest mean score (M = 4.278), followed by perceived speaking performance (M = 3.929) and writing performance (M = 3.644). Qualitative findings further demonstrated that learners gradually developed more positive attitudes toward ChatGPT following structured training in prompt generation and responsible AI use. However, some participants expressed concerns about overreliance on AI, reduced independent thinking, and plagiarism. These findings highlight the dual role of AI in cognitive development: it can encourage learners to explore ideas, evaluate language choices, and improve their understanding, but excessive dependence may undermine their capacity to think independently. Consequently, critical evaluation and verification of AI-generated responses are necessary to ensure that AI serves as a cognitive support tool rather than a substitute for learners' own reasoning processes.

Furthermore, the study by Li et al. (2025) provides additional insights into the interpersonal conditions that support cognitive engagement in AI-mediated EFL learning. Their findings revealed that teacher immediacy ($\beta = 0.30$, $p < .001$) and teacher–student rapport ($\beta = 0.35$, $p < .001$) significantly predicted student engagement, with cognitive engagement receiving a relatively high mean score (M = 3.88). These findings suggest that learners' cognitive engagement in technology-mediated environments is not determined exclusively by AI capabilities. Teacher support, interpersonal communication, and meaningful teacher–student relationships remain important in creating learning environments that encourage learners to participate actively and engage cognitively with learning tasks.

Overall, the reviewed studies indicate three interconnected dimensions of cognitive engagement in AI-supported EFL learning. First, AI learning self-efficacy strengthens learners' confidence and willingness to interact with AI tools, thereby facilitating engagement. Second, cognitive engagement is supported by AI's

capacity to provide personalized assistance, immediate feedback, and opportunities for information processing and knowledge construction. Third, critical thinking enables learners to evaluate, verify, question, and selectively integrate AI-generated information into their learning processes. Nevertheless, the reviewed findings also reveal a potential tension between AI-supported learning efficiency and learners' independent cognitive development. Although AI can facilitate learning activities, excessive dependence may reduce independent reasoning and critical evaluation. Therefore, effective AI integration in EFL education should emphasize not only learners' ability to operate AI tools but also their capacity to use them critically, reflectively, and autonomously.

Emotional Engagement, Motivation, and Psychological Experiences in AI-Assisted EFL Learning

Emotional engagement, motivation, and psychological experiences constitute important affective dimensions influencing learners' participation and sustained involvement in AI-assisted EFL learning. The integration of artificial intelligence (AI) in language education may shape learners' emotional experiences by providing personalized assistance, immediate feedback, a non-judgmental learning environment, and opportunities for independent practice. These technological affordances can contribute to learners' confidence, enjoyment, interest, and willingness to participate in English language learning. However, learners may also experience negative psychological responses, including anxiety, frustration, uncertainty, and concerns about excessive dependence on AI. Therefore, understanding emotional engagement requires examining not only learners' positive perceptions of AI but also the psychological mechanisms that influence their motivation and emotional responses during AI-mediated learning.

Jahan and Akbar (2026), in their study Exploring ChatGPT in EFL Classrooms: Insights into Engagement, Proficiency and Ethics, investigated Omani EFL learners' perceptions of ChatGPT integration in English language classrooms, particularly its contribution to language proficiency, classroom engagement, and ethical awareness. The findings demonstrated that learners generally perceived ChatGPT positively, particularly in relation to their confidence and willingness to participate in English language learning activities. Qualitative findings indicated that students perceived ChatGPT as a personal tutor that provided immediate feedback, vocabulary assistance, writing revision, and opportunities for conversational practice in a non-judgmental environment. These features helped learners develop confidence and reduced some of the psychological barriers associated with practicing English. Furthermore, structured training in prompt generation and responsible AI use contributed to a shift from initial s kepticism toward greater acceptance of ChatGPT. Nevertheless, some participants expressed concerns about excessive dependence on AI, reduced independent thinking, plagiarism, and academic fairness. These findings suggest that AI can create psychologically supportive learning environments that encourage learners' confidence and participation, although appropriate guidance remains necessary to maintain responsible and autonomous learning.

The relationship between emotional experiences and English learning engagement is further illustrated by Guo et al. (2026) in their study Pride and Shame in English Learning: Mediating the Relationship Between Classroom Environment and English Learning Engagement. Although this study did not specifically investigate AI-assisted learning, it provides

relevant theoretical insights into the emotional mechanisms underlying EFL learners' engagement. Based on data from 365 Chinese senior high school EFL learners, the findings revealed that language pride positively predicted English learning engagement ($\beta = 0.27$, $p < .001$), whereas language shame negatively predicted engagement ($\beta = -0.19$, $p < .001$). Furthermore, language pride partially mediated the relationship between teacher support and learning engagement, while language shame mediated the relationship between student cohesiveness and engagement. These findings highlight the importance of positive emotional experiences in sustaining learners' involvement in English learning. In the context of AI-assisted EFL education, such findings suggest that personalized feedback, supportive teacher guidance, and psychologically safe learning environments may help foster positive emotions and reduce negative emotional experiences during technology-mediated language learning.

Similarly, Zhou and Hou (2024), in their study Can AI Empower L2 Education? Exploring Its Influence on the Behavioural, Cognitive and Emotional Engagement of EFL Teachers and Language Learners, examined the influence of AI on behavioral, cognitive, and emotional engagement among EFL teachers and learners. Drawing on semi-structured interviews with 24 Chinese EFL teachers and 38 language learners, the findings indicated generally positive emotional responses toward AI integration. Specifically, 96% of teachers and 81.6% of learners reported positive attitudes toward AI. Participants appreciated AI's ability to provide personalized learning support, improve learning efficiency, and facilitate language-related activities. These experiences contributed to their willingness to incorporate AI into teaching and learning practices. However, the study also identified several psychological concerns. Some teachers expressed anxiety about potential job displacement, while learners raised concerns about declining motivation and changes in teacher–student relationships. These findings demonstrate that emotional engagement in AI-mediated language learning is multidimensional, involving both positive experiences associated with technological convenience and negative emotions arising from uncertainty about the role of AI in education. Consequently, AI integration should preserve meaningful human interaction and ensure that technological assistance complements rather than replaces teachers' pedagogical and emotional support.

Furthermore, Zhang et al. (2025), in their study Uncovering the Mediating Effects of AI Trust and Self-Efficacy on Engagement in Human-GenAI Communication for EFL Learning, provided insights into the psychological factors associated with learners' engagement in AI-assisted language learning. Based on data from 697 undergraduate EFL learners in China, the findings revealed that AI trust positively influenced AI learning self-efficacy ($\beta = 0.302$, $p < .001$), while AI learning self-efficacy significantly predicted learning engagement ($\beta = 0.390$, $p < .001$). AI personalization also demonstrated a significant positive influence on learners' trust and self-efficacy. These findings suggest that learners' confidence in their ability to interact with AI and their trust in AI systems are important psychological conditions supporting their engagement. When learners perceive AI as responsive and capable of addressing their individual learning needs, they may develop greater confidence and willingness to participate in AI-supported learning activities. Nevertheless, the study primarily examined trust, self-efficacy, and engagement rather than specific emotional constructs such as enjoyment, anxiety, or frustration. Its contribution to the affective dimension therefore lies in demonstrating how psychological beliefs and confidence can facilitate learners' engagement

with GenAI.

In addition, Li et al. (2025), in their study The Role of Chinese EFL Teachers' Immediacy and Rapport in Students' Engagement in the Context of AI-Mediated Education, highlighted the continuing importance of interpersonal relationships in shaping learners' emotional engagement. Based on data from 513 Chinese EFL learners, the findings demonstrated that teacher immediacy ($\beta = 0.30$, $p < .001$) and teacher–student rapport ($\beta = 0.35$, $p < .001$) significantly predicted student engagement. Emotional engagement obtained a mean score of 3.75, indicating that learners' affective involvement remained an important dimension of participation in AI-mediated education. The findings suggest that positive teacher–student relationships, empathy, mutual understanding, and supportive communication contribute to learners' engagement even when AI technologies are incorporated into the learning process. Therefore, technological integration should not overlook the emotional and interpersonal dimensions of language education. Teachers continue to play an essential role in establishing supportive learning environments that encourage learners to feel valued, motivated, and emotionally connected to their learning experiences.

Overall, the reviewed studies reveal that emotional engagement and motivation in AI-assisted EFL learning are shaped by the interaction of technological affordances, psychological beliefs, and interpersonal support. Three important patterns emerge from the literature. First, positive emotional experiences, including confidence, enjoyment, and positive attitudes, can encourage learners to participate more actively in AI-assisted language learning. Second, psychological factors, particularly AI trust and AI learning self-efficacy, contribute to learners' willingness and motivation to engage with AI technologies. Third, emotional challenges, such as anxiety, uncertainty, declining motivation, and concerns about AI dependence, may limit the sustainability of learners' engagement. The findings also emphasize that teacher support and meanin gful interpersonal relationships remain essential in maintaining emotional engagement in technology-mediated learning environments. Nevertheless, the existing studies predominantly examine learners' general perceptions, attitudes, trust, and self-efficacy, while specific emotional trajectories and the development of motivation during prolonged AI-assisted EFL learning remain less clearly understood.

Pedagogical, Interpersonal, and Ethical Factors Shaping Engagement in AI-Mediated EFL Learning

Pedagogical, interpersonal, and ethical factors play essential roles in shaping learners' engagement in AI-mediated EFL learning. Although artificial intelligence (AI) provides opportunities for personalized instruction, immediate feedback, and interactive language practice, the effectiveness of its integration depends not only on technological capabilities but also on instructional strategies, teacher–student relationships, and responsible AI use. These dimensions demonstrate that successful AI integration requires a balanced approach in which technological affordances are supported by appropriate pedagogical practices, positive interpersonal relationships, and ethical considerations.

Jahan and Akbar (2026), in their study Exploring ChatGPT in EFL Classrooms: Insights into Engagement, Proficiency and Ethics, found that structured training in prompt generation and responsible AI use contributed to learners' positive perceptions of ChatGPT. Students perceived ChatGPT as a personal tutor that provided immediate feedback, supported vocabulary development, facilitated writing

revision, and offered opportunities for conversational practice. Classroom engagement obtained the highest mean score (M = 4.278), indicating learners' positive perceptions of ChatGPT's potential to facilitate active participation and personalized learning. These findings suggest that pedagogical guidance and structured AI training are important for helping learners maximize the instructional benefits of AI technologies. However, participants also expressed concerns about plagiarism, academic fairness, excessive dependence on AI, reduced independent thinking, and unclear institutional policies, highlighting the importance of integrating ethical awareness into AI-supported learning activities.

Similarly, Zhou and Hou (2024), in their study Can AI Empower L2 Education? Exploring Its Influence on the Behavioural, Cognitive and Emotional Engagement of EFL Teachers and Language Learners, demonstrated that AI supported various instructional and learning activities, including teaching material preparation, assignment assessment, translation, summarizing concepts, and simulated speaking practice. Their findings indicated that 79% of teachers recognized AI's benefits in reducing teaching workloads and improving instructional efficiency, while 94.7% of learners reported improvements in learning efficiency. Nevertheless, participants identified challenges related to inaccurate translations, outdated information, and excessive dependence on AI. These findings emphasize the importance of pedagogical strategies that encourage learners to use AI as a complementary instructional resource while maintaining independent learning and critical evaluation.

Furthermore, Zhang et al. (2025), in their study Uncovering the Mediating Effects of AI Trust and Self-Efficacy on Engagement in Human-GenAI Communication for EFL Learning, highlighted the importance of personalization and responsiveness in AI-supported learning. Their findings revealed that AI personalization significantly predicted learners' trust ($\beta = 0.408$, $p < .001$) and AI learning self-efficacy ($\beta = 0.174$, $p = .001$), suggesting that personalized and responsive AI interactions can strengthen learners' confidence and willingness to engage with AI technologies. From an instructional perspective, these findings indicate the importance of incorporating personalized AI-supported activities that address learners' individual needs, proficiency levels, and learning objectives. However, these activities should also provide opportunities for learners to evaluate AI-generated responses and make independent learning decisions.

Beyond pedagogical considerations, interpersonal relationships remain fundamental to sustaining learners' engagement in AI-mediated EFL learning. Li et al. (2025), in their study The Role of Chinese EFL Teachers' Immediacy and Rapport in Students' Engagement in the Context of AI-Mediated Education, examined the influence of teacher immediacy and teacher–student rapport on student engagement among 513 Chinese EFL learners. The findings revealed that teacher immediacy ($\beta = 0.30$, $p < .001$) and teacher–student rapport ($\beta = 0.35$, $p < .001$) significantly predicted student engagement, while teacher immediacy also positively influenced teacher–student rapport ($\beta = 0.62$, $p < .001$). Furthermore, these interpersonal factors collectively explained 53% of the variance in student engagement ($R^2 = 0.53$). Descriptive findings indicated that behavioral engagement (M = 3.90) was the highest dimension, followed by cognitive engagement (M = 3.88) and emotional engagement (M = 3.75). These findings demonstrate that teachers' interpersonal communication behaviors, including eye contact, gestures, empathy, mutual understanding, and supportive interaction, remain important in encouraging learners'

participation in AI-mediated learning environments.

Similarly, Zhou and Hou (2024) highlighted the continuing importance of teachers in AI-integrated language education, particularly in providing emotional support, facilitating collaborative learning, and maintaining meaningful teacher–student relationships. Their findings also revealed concerns about potential changes in interpersonal relationships and declining learner motivation, suggesting that AI technologies should complement rather than replace teachers' pedagogical and interpersonal roles. In addition, Guo et al. (2026), in their study Pride and Shame in English Learning: Mediating the Relationship Between Classroom Environment and English Learning Engagement, provided further insights into the influence of classroom relationships on learners' engagement. Although the study did not specifically examine AI-mediated learning, its findings offer relevant implications for designing supportive technology-enhanced EFL environments. Based on 365 Chinese senior high school EFL learners, the study found that teacher support ($\beta = 0.30$, $p < .001$), task orientation ($\beta = 0.26$, $p < .001$), and student cohesiveness ($\beta = 0.24$, $p < .001$) positively predicted English learning engagement. Teacher support emerged as the strongest predictor, while language pride positively predicted engagement and language shame negatively predicted it. These findings indicate that supportive teacher relationships and positive peer interactions contribute to learners' engagement by fostering positive emotional experiences. In AI-mediated classrooms, teachers therefore need to maintain supportive communication and collaborative activities to ensure that technological interaction does not diminish learners' sense of belonging and interpersonal connection.

From an ethical perspective, the reviewed studies further demonstrate that responsible AI use is essential for maintaining meaningful engagement and academic integrity. Jahan and Akbar (2026) emphasized the importance of structured training in prompt generation, information verification, and ethical awareness to help learners recognize the limitations of AI-generated content. Similarly, Zhou and Hou (2024) identified concerns about inaccurate information, outdated content, and excessive dependence on AI, indicating that learners should not automatically accept AI-generated responses as accurate or authoritative. Instead, they need to develop the ability to question, evaluate, and verify AI-generated information before incorporating it into their learning activities. Zhang et al. (2025) also demonstrated that AI trust and AI learning self-efficacy significantly contributed to learners' engagement; however, trust in AI should not be interpreted as unquestioning acceptance of AI-generated information. Rather, productive engagement requires learners to balance confidence in using AI with critical awareness of its limitations.

Overall, the reviewed studies indicate that engagement in AI-mediated EFL learning is shaped by the interaction of pedagogical guidance, interpersonal support, and ethical awareness. Pedagogical practices, including structured AI training, effective prompt generation, personalized learning activities, and guided feedback, facilitate meaningful AI interaction. Meanwhile, teacher immediacy, rapport, empathy, and collaborative classroom interaction maintain learners' social and emotional connections. Ethical awareness, including academic integrity, information verification, and responsible AI use, promotes learner autonomy and critical engagement. Nevertheless, the existing studies tend to examine these factors separately, providing limited understanding of how pedagogical, interpersonal, and ethical dimensions interact in shaping learners' engagement with generative

AI. Further research is therefore needed to investigate how learners' AI literacy and English proficiency influence their ability to engage with AI responsibly, maintain learning autonomy, and critically evaluate AI-generated content in EFL learning contexts.

Conclusion

This systematic literature review concludes that Generative Artificial Intelligence (GenAI) has considerable potential to enhance student engagement in English as a Foreign Language (EFL) education through behavioral, cognitive, and emotional dimensions. Based on the synthesis of six studies published between 2024 and 2026, the findings demonstrate that GenAI-supported learning facilitates active participation, personalized learning experiences, immediate feedback, autonomous language practice, and increased confidence in English language learning. Behavioral engagement is reflected in learners' active interaction with AI tools, participation in language-learning activities, and utilization of AI-generated feedback. Cognitive engagement is influenced by AI learning self-efficacy, AI trust, critical thinking, and learners' ability to evaluate and apply AI-generated information. Meanwhile, emotional engagement is associated with motivation, enjoyment, confidence, and positive attitudes toward AI-assisted learning. The findings further emphasize that meaningful student engagement depends not merely on the frequency of AI use but also on the quality of learner interaction, cognitive investment, and independent participation. Therefore, GenAI should be understood as a complementary educational technology that supports meaningful language learning rather than replacing learners' intellectual contributions or teachers' instructional responsibilities.

Furthermore, this review highlights that the successful integration of GenAI into EFL education requires a balanced combination of technological innovation, pedagogical guidance, interpersonal support, and ethical awareness. Although GenAI offers substantial opportunities to improve learning efficiency and engagement, several challenges remain, including excessive dependence on AI-generated content, inaccurate information, reduced independent thinking, academic dishonesty, and potential changes in teacher–student relationships. Consequently, educators should implement structured AI-assisted learning activities, provide explicit instruction in effective prompt generation, encourage critical evaluation of AI-generated responses, and promote responsible AI practices while maintaining supportive teacher–student interactions. Educational institutions should also establish clear guidelines for ethical AI integration and strengthen students' AI literacy, critical thinking, and autonomous learning skills. Future research is recommended to employ longitudinal, experimental, and mixed-methods approaches to investigate the sustained effects of GenAI on multidimensional student engagement across diverse EFL educational contexts. Further investigations should also examine how learners' psychological characteristics, instructional strategies, and ethical decision-making interact to influence engagement over time. Ultimately, effective GenAI integration should prioritize learner-centered pedagogical practices that foster active participation, cognitive independence, emotional well-being, and sustainable engagement in English language education.

References

Ciampi, M. M., Brito, C. R., Feldgen, M., & Clua, O. (2025). Plenary: Education in the Age of Generative AI: Embracing Digital Transformation. *EDUNINE 2025 - 9th IEEE Engineering Education World Conference: Education in the Age of Generative AI:*

Embracing Digital Transformation - Proceedings. https://doi.org/10.1109/EDUNINE62377.2025.10981392

Daniels, L. M., Adams, C., & McCaffrey, A. (2015). Emotional and Social Engagement in a Massive Open Online Course: An Examination of Dino 101. In *Emotions, Technology, and Learning* (pp. 25–41). Elsevier. https://doi.org/10.1016/B978-0-12-800649-8.00004-3

Eroglu, U., Oran, Ç., Severdim, K., Çelik, K. K., & Hancı-Azizoglu, B. E. (2026). Exploring GenAI as an Alternative to Traditional Language Learning. In *Encyclopedia of Modern Artificial Intelligence* (pp. 3877–3898). IGI Global. https://doi.org/10.4018/979-8-3693-5638-8.ch160

Guo, G., Tang, Z., & Liu, H. (2026). Pride and Shame in English Learning: Mediating the Relationship Between Classroom Environment and English Learning Engagement. *European Journal of Education*, *61*(4). https://doi.org/10.1111/ejed.70859

Jahan, F., & Akbar, H. (2026). Exploring ChatGPT in EFL classrooms: insights into engagement, proficiency and ethics. *Discover Education*, *5*(1). https://doi.org/10.1007/s44217-026-01158-w

Jiang, Y. (2026). Exploring the Relationship Between Personalization and Engagement in AI-Assisted English Learning: The Chain Mediating Roles of Perceived Autonomy and Learning Interest. *European Journal of Education*, *61*(3). https://doi.org/10.1111/ejed.70773

Joel, R., Lakshmi, N., Shanthakumar, P., Jeba Freeda, T. D., Siva, A., & Thalapathi Rajasekaran, R. (2024). Evaluating the Impact of AI Tools on Teaching Effectiveness and Student Outcomes: Opportunities and Challenges. In *Improving Student Assessment With Emerging AI Tools* (pp. 273–300). IGI Global. https://doi.org/10.4018/979-8-3693-6170-2.ch010

Li, C., Solhi, M., & Wang, Y. (2025). The Role of Chinese EFL Teachers' Immediacy and Rapport in Students' Engagement in the Context of AI-Mediated Education. *European Journal of Education*, *60*(4). https://doi.org/10.1111/ejed.70289

Li, C. T., Lee, L. H., & Hou, H. T. (2024). An Educational Simulation Game Integrated with Generative AI as Conversational Contextual Scaffolding for Business English: A Preliminary Analysis of Learning Achievement, Self-Efficacy and Cognitive Load. *Proceedings - 2024 16th IIAI International Congress on Advanced Applied Informatics, IIAI-AAI 2024*, 726–727. https://doi.org/10.1109/IIAI-AAI63651.2024.00155

Ma, Y., & Chen, M. (2024). AI-empowered applications effects on EFL learners' engagement in the classroom and academic procrastination. *BMC Psychology*, *12*(1). https://doi.org/10.1186/s40359-024-02248-w

Mekheimer, M. (2025). Generative AI-assisted feedback and EFL writing: a study on proficiency, revision frequency and writing quality. *Discover Education*, *4*(1). https://doi.org/10.1007/s44217-025-00602-7

Min, S., Hj Ya'akub, H. Z. B., & Hj Hassan, R. A. B. (2026). Thinking Through the Algorithm: Learner Cognition, Agency, and Communicative Effectiveness in AI-Mediated Language Education. In *Reshaping Language and Cognition in Education Through AI* (pp. 197–219). IGI Global. https://doi.org/10.4018/979-8-3373-4397-6.ch006

Moreira, P., Cunha, D., & Inman, R. A. (2020). An Integration of Multiple Student Engagement Dimensions into a Single Measure and Validity-Based Studies. *Journal of Psychoeducational Assessment*, *38*(5), 564–580. https://doi.org/10.1177/0734282919870973

Tang, Q., Deng, W., Huang, Y., Wang, S., & Zhang, H. (2025). Can Generative Artificial Intelligence be a Good Teaching Assistant?—An Empirical Analysis Based on Generative AI-Assisted Teaching. *Journal of Computer Assisted Learning*, *41*(3). https://doi.org/10.1111/jcal.70027

Zhang, Q., & Han, X. (2025). Research on Cognitive Engagement in Graduate Students' Human-computer Interaction Supported by Generative AI. *Proceedings of 2025 2nd International Symposium on Artificial Intelligence for Education, ISAIE 2025*, 957–962. https://doi.org/10.1145/3775073.3775223

Zhang, Q., Pan, X., & Fan, J. (2025). Uncovering the Mediating Effects of AI Trust and Self-Efficacy on Engagement in Human-GenAI Communication for EFL Learning. *European Journal of Education*, *60*(4). https://doi.org/10.1111/ejed.70336

Zhou, C., & Hou, F. (2024). Can AI Empower L2 Education? Exploring Its Influence on the Behavioural, Cognitive and Emotional Engagement of EFL Teachers and Language Learners. *European Journal of Education*, *59*(4). https://doi.org/10.1111/ejed.12750