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Discourse, Identity, and Cognitive Load: An Inquiry of EFL Learners Use of Language in AI-Mediated Sociocultural Contexts

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A B S T R A C T

This study examines how learners of English as a foreign language use language to create identity, stimulate motivation, and manage cognitive stress in AI-mediated learning contexts. The study emphases on the sociocultural backgrounds of the learners. The analysis involves a thematically sensitive discourse coding aligned with Self-Determination Theory, Sociocultural Theory, and Cognitive Load Theory. The study is grounded on semi-structured interviews with fifteen students from two university faculties. The findings reveal that learner strategies were to employ narrative discourses and evaluative language to confirm identity or reduce linguistic dominance. Students also use metaphors and temporal markers to describe cognitive load. Peer and teacher prompts, as well as AI tools, also reflect the learners' identities. It was revealed that contextual factors, such as ways of peer interaction, resource limits, and faculty norms stimulus the occurrence and understanding of these practices. The study shows that in AI-enhanced classrooms, language practise assists as a medium that supports sociocultural bonds and makes motivational dynamics more stable. These findings support the proposal of pedagogical approaches which are identity-sensitive, feedback designed linguistic approaches, and assessments which are aware of the discourse of AI tools in EFL contexts. The study is an attempt to add to the improvement of applied linguistics in the field of technology-mediated language acquisition, by focusing on the discourse as a way to access motivational experience and linking the micro-level linguistic practices to larger sociocultural processes. .

الخطاب والهوية والاجهاد المعرفي: دراسة في استخدام متعلمي اللغة الإنجليزية كلغة أجنبية للغة في السياقات الاجتماعية والثقافية التي تعتمد على الذكاء الاصطناعي

د. غيداء علي محمد / جامعة زاخو

المستخلص:

هذه دراسة ظاهراتية تبحث في كيفية استخدام متعلمي اللغة الإنجليزية كلغة أجنبية للغة لبناء هويتهم، وتحفيز دافعيتهم، والتعامل مع الاجهاد المعرفي في سياقات التعلم الاجتماعية والثقافية المعتمدة على الذكاء الاصطناعي. يتضمن التحليل ترميزًا للخطاب حساسًا للموضوعات، متوافقًا مع نظرية تقرير المصير، والنظرية الاجتماعية الثقافية، ونظرية الجهاد المعرفي. تستند الدراسة إلى مقابلات شبه منظمة مع خمسة عشر طالبًا من كليتين جامعيتين. و تكشف النتائج أن استراتيجيات خطاب المتعلمين تعتمد على التأطير السردي واللغة التقييمية لتأكيد الهوية أو الحد من الهيمنة اللغوية، وتستخدم الاستعارات والعلامات الزمنية لوصف الضغوط المعرفية. كما تعكس توجيهات الأقران والمعلمين، بالإضافة إلى أدوات الذكاء الاصطناعي، هويات المتعلمين. توضح الدراسة كيف تؤثر العوامل السياقية، مثل أشكال التفاعل بين الأقران، ومعايير أعضاء هيئة التدريس، ومحدودية الموارد، على ظهور هذه الممارسات اللغوية وفهمها. ووفقًا للدراسة، في الفصول الدراسية المعززة بالذكاء الاصطناعي، يُعد استخدام اللغة وسيلةً تُعزز الروابط الاجتماعية والثقافية وتُثبت ديناميكيات التحفيز. تشجع هذه النتائج على اقتراح مناهج تربوية مراعية للهوية، ومناهج لغوية لتصميم التغذية الراجعة، وتقييمات واعية بالخطاب لأدوات الذكاء الاصطناعي في سياقات اللغة الإنجليزية كلغة أجنبية. في مجال اكتساب اللغة بوساطة التكنولوجيا، تسعى الدراسة إلى المساهمة في تطوير اللغويات التطبيقية من خلال التركيز على الخطاب كوسيلة للوصول إلى التجربة التحفيزية المعاشة، وربط الممارسات اللغوية على المستوى الجزئي بالعمليات الاجتماعية والثقافية الأوسع.

الكلمات المفتاحية : السياق ، ملفات التعريف بالمتعلمين، الاجهاد المعرفي، التحليل الموضوعي، الدافعية، النظرية الاجتماعية الثقافية، الذكاء الاصطناعي، طلاب اللغة الإنجليزية كلغة أجنبية

1. Introduction

Artificial Intelligence (AI)-powered tools like Duolingo, Google Translate, Grammarly, and Chat GPT provide English as a Foreign Language (EFL) learners with unlimited access to personalised, instant, and adaptive language support, specifically in situations where resources are limited. Although these technologies potential productivity and individuality, little is identified about how they affect learner motivational attitudes in language acquisition.

The consistency, depth, and the quality of learner's involvement are determined by motivation, both intrinsic and extrinsic. Motivation is not just a psychological concept; it is also a pedagogical necessity, particularly in EFL settings where students frequently struggle with sociocultural obstacles, unequal exposure, and inconsistent instructional quality. Designing impartial and context-sensitive curriculum requires awareness of the motivational influence of AI technologies, which are becoming more and more integrated with daily learning practises.

Scholarly interest is growing in AI technologies' ability to impact motivational dynamics in EFL contexts as they become more and more integrated into daily learning routines. According to preliminary data, these technologies actively influence student interest and self-perception in addition to simplifying language activities. For example, it has been demonstrated that platforms with culturally diverse material promote both language competency and intercultural awareness, which enhances the motivational environment (Masoudi, 2025). Further illustrating how AI can assist student autonomy and cognitive load management, innovations such as multi-display teaching systems which can boost motivation in more dynamic classroom environments (Hong & Guo, 2025). AI-assisted activities seem to be substantially associated with enhanced learner engagement, even in targeted skill areas like oral reading, especially for undergraduates negotiating complex language tasks (Alfaleha et al., 2025).

The study examines how AI-mediated learning influences the motivational orientations of EFL students at the University of Zakho with a focus on two important faculties: Humanities and Basic Education. It also observes AI tools benefits and drawbacks in encouraging learners' activity, satisfaction, and self-efficacy. The method is a mixed-methods approach and the data is taken from 15 students at different academic

levels to expand the corpus of the research and to balance pedagogical integrity with technological innovation in contexts where learner's diversity and culture backgrounds must be carefully considered.

It is also aimed to explore why learners are attracted to use AI tools and what are the main causes for such attraction, such as usefulness, novelty, ease to use or curiosity .This phase is the post-adoption phase since it is expected that AI tools will influence learners' motivation continually. The study puts more emphasis on learners' motivating as a result of engagement in using AI. It investigates the reasons behind the resistance of using AI tools and the key difficulties that prevent students from using them, in a way that preserves their motivation over time. Therefore, the focus is not limited to what motivates learners, rather it covers what hold back their motivation. By doing so, the study is making sure that AI integration is pedagogically essential rather than being simply appealing from a technological perspective.

2. Statement of the Problem

(AI) applications like Duolingo, Google Translate, ChatGPT, and Grammarly changed the field of teaching English as a Foreign Language (EFL) rapidly. These technologies raised learner's motivation and stimulated the engagement in language learning environments by providing direct feedback, individual support, and greater autonomy (Alfaleha et al., 2025; Masoudi, 2025; Hong & Guo, 2025). The motivational advantages of AI-enhanced training, such as increased learner self-efficacy, enjoyment, and task persistence, have started to be documented by earlier studies. These findings imply that AI tools, especially when included into interactive or culturally sensitive learning settings, can have a favourable impact on both intrinsic and extrinsic motivational orientations.

However, a number of significant gaps still exist in spite of this growing amount of data. First, a large portion of the research that has already been done has been done in environments that are technologically sophisticated or well-resourced, providing little information on how students in less connected or infrastructure-limited areas—like Kurdistan Region of Iraq—experience and maintain motivation when utilising AI tools. Second, although motivational outcomes have been studied in quantitative studies, few qualitative studies have looked at EFL learners' actual experiences, particularly with relation to the difficulties they have

sustaining motivation over time. Although they have been observed personally, problems including unreliable internet connectivity, a lack of culturally sensitive information, and an excessive dependence on automated feedback have not received enough theoretical or empirical attention.

In order to fill these gaps, this study examines how AI-powered applications affect EFL learners' motivation in the University of Zakho, with a particular

focus on the Basic Education and Humanities faculties. In addition to examining the motivational orientations that are most impacted by the use of AI tools, it also looks at the obstacles that prevent ongoing involvement.

To address these questions, the analysis relies on three interlocking theoretical lenses. Self-Determination Theory (SDT henceforth by Deci & Ryan, 1985) which highlights the importance of autonomy, competence and relatedness in shaping intrinsic motivation, Socio-cultural Theory (SCT henceforth by Vygotsky, 1978) which put emphasis on the role of social facilitation throughout learning, and Cognitive Load Theory (CLT henceforth by Sweller, 1988) which highlights how digital feedback impacts learner's cognitive effort with a clear distinctions between germane (productive) and extraneous (unproductive) cognitive load. These theoretical frameworks provide a multidimensional observation on the ways in which AI tools motivate learner to be more engaged in contexts which are linguistically and socio-culturally diverse.

A qualitative phenomenological research is designed to investigate these inquiries with a focus on the experiences of fifteen EFL students (19–22 years). The sociocultural background of the participant's ranges between rural and urban areas and the resources of their electronic devices and internet access varies too. The data is collected via a semi-structured interviews and are analysed thematically following Braun's and Clarke (2006) six-step analysis. Then, a deductive coding, based on three theories (SDT, SCT and CLT) was conducted, to end with analysing participant's narratives inductively to classify them into different learners' profiles.

The social and cultural factors that stimulus EFL students' motivation are given especial focus In this study, mainly when the students use AI tools for language learning. Additionally the study also examines how students

sustain attention and what strategies they use to control their cognitive effort. The aim is to identify learners' profiles in AI-enhanced settings when social mediation, cognitive regulation, and motivation are interacted.

Tis study attempts to contribute to the rapidly present conversation on using AI impartially and efficiently in the educational context. The results are useful instructions for the curriculum developers, educators, and even AI investors to better the utilisation of the AI tools for all the ranges of learner and to make sure that technological evolutions advance rather than weaken language growth.

3. Research Methodology

A qualitative phenomenological approach is used in the current study to investigate the real-life experiences of EFL students using AI tools in settings with limited resources. In order to highlight participants' subjective views, emotional reactions, and contextual limitations when interacting with AI tools such as Duolingo, ChatGPT, and Grammarly. The approach meets the interpretivist perspective and is especially well-suited to reveal the cognitive and motivational aspects of AI-mediated learning since it makes the assumption that reality is socially created and that meaning develops via discussion and introspection.

The conceptual orientation of the study was led by three theoretical frameworks. The SDT (Deci & Ryan, 1985) which offers a prism through to view how AI tools can help or hinder learners' psychological demands for relatedness, competence, and autonomy. While the analysis of peer and teacher interactions was guided the SCT (Vygotsky, 1978), which highlighted the function the AI as a mediator in collaborative learning. The impact of AI boundaries and feedback systems on learners' cognitive effort was evaluated using the CLT (Sweller, 1988) by setting clearly the borders between productive (germane) and unproductive (extraneous) cognitive load.

The data was examine via Braun and Clarke's (2006) six-phase thematic analysis. This technique allowed the analysis of emergent coding patterns to be both and deductive inductive. The six phases of the thematic analysis are:

1. Familiarisation: To read through the transcripts and saw that there was a lot of inspirational language.

2. Coding: mapped answers to emergent patterns and SDT/SCT/CLT constructions

3. Theme Development: Based on the sort of motivation, codes were clustered into learner profiles.

4. Examining Themes: Verified consistency among instances and adjusted according to saturation

5. Defining Themes: Each profile was named and explained with a theoretical foundation.

6. Writing Up: Using construct alignment, demographic connections, and quotes, themes were presented.

The selection of thematic analysis was based on its adaptability, transparency, and capacity to capture complex, experience-rich narratives in a small, purposefully chosen sample.

4. Questions

1. What motivational experiences do EFL students have when using AI tools in language learning environments?

2. What social and cultural elements influence students' motivation and approach to AI-mediated tasks?

3. What techniques do students use to maintain engagement and how do they handle cognitive load when using AI tools?

4. What distinctive learner profiles result from the interaction of cognitive effort, social mediation, and motivational regulation in AI-enhanced EFL learning?

5. Literature Review

5.1 Previous studied

Recent educational research has focused on the incorporation of AI techniques into EFL learning environments, especially with regard to student motivation. To maximise the pedagogical benefits of AI platforms, it is crucial to comprehend the motivating elements that encourage EFL learners to use them as well as how these tools affect intrinsic and extrinsic motivation. This review highlights the results of recent studies with an emphasis on the difficulties faced by students, the impact of certain AI tools, and motivational factors.

Wu et al. (2023) provide a conceptual study which synthesis SDT and SCT to investigate how blended learning settings can stimulate motivation and autonomy in second language teaching. According to Wu

et al. (2023), the psychological demands of SDT like autonomy, competence, and relatedness, are facilitated socially through the SCT mechanisms, like peer cooperation, teacher scaffolding, and cultural norms, in addition to being important on an individual foundations. Their concept is that learners can improve motivational attitude in a socially supported autonomy within blended learning context. Such context can provide a rich setting for the operation of both theories simultaneously. Although the study is theoretical and lacking a concrete evidence, it offers a strong example for relating SCT and SDT to generate language learning settings which is pedagogically responsive. The authors particularly, neglected learners' engagement with AI technologies and didn't observe the cognitive load on the learners. Whereas the current study expands on Wu et al.'s conceptual mixture by adding a third lens which is the CLT. The three lenses framework boosts the thematic analysis of EFL learners' interactions with AI empirically. This triangulated approach made possible a thorough understanding of how motivation, social mediation, and cognitive effort work together to build learner's profiles in technology-enhanced contexts.

Zheng et al. (2024) also combined the Unified Theory of Acceptance and Use of Technology (UTAUT) with the SDT in a comprehensive quantitative study to investigate how regulated motivations influence the authentic use of AI and the behavioural intention of EFL. The authors investigated the motivation of 620 undergraduates in China and reviled that learners' intention to use AI tools was significantly boosted by intrinsic and identifiable motivation, whereas extrinsic regulation was related to lower engagement. According to the study, except for the price value, other constructs like effort and performance expectation, and social impact were significant predictors of acceptance of technology. The authors used confirmatory factor analysis and structural calculation modelling which were build on the SDT to figure the sum of the influencing technology adoption. Though the research provides perceptive information about the motivational aspects of the students' AI engagement, it does not examine learners' experience qualitatively or take into account learners' sociocultural backgrounds or their cognitive load viewpoints.

Masoudi (2025) conducted a systematic study which highlights the important role plied by AI platforms to improve language skills and

intercultural competence among EFL learners. The author distinguishes between instrumental motivation, where learners are engaged in AI technologies to attain language for practical purposes, and integrative motivation, which reflects the desire to be culturally connected by acquiring a language. Masoudi suggests that task-based motivations are the most prominent, because AI systems continually offer novel, dynamic and personalised learning experiences which match the urgent linguistic needs of the learners. Alike to this, Kundu and Bej (2025) celebrated the innovative potential of AI in EFL. The authors examine a wide range of learners' motivational profiles in a comprehensive empirical research. They debate that learners' engagement increases and their motivation grow into a more permanent stimulus because AI technologies are able to adapt according to the learners' preferences. Although the two studies offer accommodating quantitative insights, they don't take into consideration learner's diversity, their circumstantial limitations, or socio-cultural facilitation. In addition the authors don't inspect the existence of unique learner's profiles or the complicated ways in which students' operate their sense of balance to preserve motivation at times of high cognitive load.

Generative AI and its reproductive of large language learning models was investigated by Liu, Sihes, and Lu (2025) who shed light on the capacity of these technologies to motivate learners' critical thinking in relation to intrinsic motivation. According to their systematic study, AI technologies increase learners' curiosity and independence by offering opportunities for creative language output and real-time feedback. Their claim chains with the findings of Boguslawski, Deer, and Dawson (2025) on software designed education, where it has been proven that reproductive AI sustains learners' motivation when it provides instant and precise help to cracking issues, especially in relation to the requirements of speaking and writing skills of EFL student. According to the studies there is always a possibility that extrinsic motivators might exceed intrinsic motivation if they were not balanced carefully. The authors argue that this occurs when the divergence between the performance demands and the instant rewards associated with using AI tools is big. In comparison with the current study, these researches overlook the digital restrictions and societal impacts. Additionally, although the studies

brought the concept of cognitive load under discussion, they don't examine the ways which learners use control it actively in real time.

Utilising AI tools to sustain learners' motivation presents a number of challenges even with its various advantages. For example, Koroleva and Jogezai (2025) in their investigation of institutional and cultural basics which affect AI adoption, found that learners' anxieties over the ethical implications and reliability of AI can lower their motivation. The researchers suggest that these concerns are intensified in locales which levels of AI literacy are low, or when teaching methods are conventional. In contrast to the current study, they follow a methodology that ignores individual dissimilarities in EFL settings, especially when AI resources are limited. Therefore, their findings are of less usefulness for the comprehensive comprehending of learners' participation in the classroom.

Hur (2025) gives emphasis to the significance of rising teachers' AI awareness pre-service, because it has a direct influence on students' motivation at the long-term and leads to integrating AI effectively. The study is interesting for the purpose designing curricular that integrate AI within the traditional methods of teaching, yet, it doesn't observe by what method learners governor their motivation, or how they control their cognitive loads when they assigned an AI-mediated tasks. This research, from another point of view, emphasis learners' voices and offers a more detailed, categorises and unique motivational profiles. In addition, it investigates how AI engagement is influence by social and cultural aspects.

Virtanen et al. (2025) and Selig, Tallant and Chen (2025), warned that high expectations or anxieties about the role of AI in the educational process could discourage teachers and demotivate the pupils. The major concern of the studies was on designing contemporary curriculum in relation to institutional preparation. Therefore, little information is provided concerning learners' cognitive and their motivational experiences when using AI tools. On the other hand, this study, applications focused on learners' activity by giving the weight to the motivation within particular sociocultural context where the AI access is limited.

From another point of view Daweli and Mahyoub (2024) research celebrated the revolutionary impact of AI on education, especially in

language learning settings. They focused capacity of AI's to rise learners' engagement, support their independence, and increase personalised instruction. The authors summarise the literature written about AI tools such as Grammarly, ChatGPT, and Readlang around the world as an indication of the popularity of these tools. They calm that the reason is that the tools help in promoting vocabulary acquisition, grammatical competency, and writing skills. Daweli and Mahyoub also put a figure on a significant research gap regarding reading skills and instruction, particularly in Middle Eastern and Arab EFL settings. They didn't miss examining AI influence on motivation to revealing that learners' confidence and anxiety levels changed as a result of adaptability of the AI systems and the absence of judgment. They also highlight ethical concerns in relation to academic orientation, social sensitivity, and data confidentiality. Their study, however, overlooks learners' deliberate control of their motivation or their load on their cognitive capacities while exploiting AI for learning activities. What's more, they didn't take into account the distinctive learners' profiles and the socio-cultural impact on AI mediation.

The present research stresses the complex nature of the factors that stimulus EFL learners' motivation to use AI tools. These factors include task-based, integrative, and instrumental aspects. The investigations of the use of AI tools asserts the positive impact, on both extrinsic and intrinsic motivation, mainly when they stimulate personalised approaches in learning, and raise the awareness of critical thinking. However, continuing motivation may be slowed down by concerns related to cultural attitudes, institutional perspectives, and AI literateness. These observations provide a resilient foundation for the current phenomenological quantitative study to investigate what motivational strategies are followed by EFL learners' to use AI tools. In addition, a thematic analysis was the suitable to shed light on these learners' unique experiences.

5.2 Theoretical Framework

The current study make use of three interconnected theories; SCT, SDT, and CLT, to shed light on the psychological, pedagogical, cognitive processes that stimulate EFL learners' motivation to use AI tools. By connecting learners' experiences with AI-mediated education to their internal motivations, social contexts, and mental processes, these

frameworks collectively support our analytical approach and interpretive position.

According to the Self-Determination Theory (Deci & Ryan, 1985; Ryan & Deci, 2000), when the three fundamental psychological demands of relatedness, competence, and autonomy are met, optimal motivation results. Relatedness includes feeling connected to others; competence is feeling effective in dealing with the environment; and autonomy refers to learners' sense of volition and ownership over their actions. Tools like ChatGPT or Duolingo can enhance autonomy in AI-enhanced EFL situations by allowing learners to select tasks, improve competency through immediate and personalised feedback, and promote relatedness when social aspects (such as peer feedback or collaborative chats) are incorporated. Therefore, SDT offers a moral framework for determining which motivational orientations—social engagement, instrumental value, or intrinsic enjoyment—are most impacted by the deployment of AI (Research Question 1) and for comprehending how unfulfilled demands could appear as obstacles to motivation (Research Question 2).

Working memory has a limiting capacity, according to the Cognitive Load Theory (Sweller, 1988), and instructional methods must reduce unnecessary load to free up cognitive resources for important processing. By breaking down complex input (e.g., multimodal translation in Google Translate), automating low-level tasks (e.g., grammar correction via Grammarly), and offering just-in-time scaffolds, artificial intelligence (AI) tools can reduce unnecessary load. On the other hand, overpowering feedback or badly designed AI interfaces can place extra mental strain on users, which lowers motivation and learning effectiveness. In line with investigations into the difficulties faced by learners (Research Question 2) and the circumstances that encourage perseverance (Research Question 3), CLT thus sheds light on the cognitive mechanisms by which AI tools either promote sustained engagement (through optimised load management) or create barriers (through cognitive overload).

Sociocultural Theory, which is based on Vygotsky's (1978) idea that learning is a socially mediated activity, emphasises the importance of social contact, cultural tools, and the Zone of Proximal Development (ZPD) in the development of language and cognition. ZPD describes the variety of tasks that a student can complete with assistance or cooperation from a more experienced person—such as a teacher, peer, or digital

tool—but is nevertheless unable to complete on their own. AI programs act as virtual "more knowledgeable others" by mediating learners' meaning negotiation, modelling language use, and guiding task performance. According to this viewpoint, the motivational experiences of EFL learners come from dynamic interactions with classmates, teachers, and AI technologies rather than just internal desires. SCT supports a qualitative, interpretive approach, focussing on how learners appropriate AI-mediated help within their ZPD and how contextual elements (such as the cultural relevance of AI content and group-based learning structures) influence motivational paths (Research Question 3).

The majority of research on AI-mediated language acquisition use single-theory models that separate the cognitive, social, or motivational aspects, despite the increased interest in this field. For instance, Wu et al. (2023) conceptually connected Self-Determination Theory (SDT) and Sociocultural Theory (SCT) to investigate autonomy in blended learning, while Zheng as al. (2024) included SDT into a technological acceptance framework to investigate motivational regulation. But these studies either ignore cognitive processing or use theoretical or quantitative methods that ignore how learners' experiences are complex and context-sensitive. By presenting a novel tripartite framework that combines SDT, SCT, and CLT to interpret EFL learners' use of AI tools, the current study advances the area. This theoretical and methodological integration operationalises these constructs through a hybrid deductive–inductive thematic analysis and allows for a multifaceted understanding of motivation as a dynamic outcome shaped by internal regulation (SDT), social mediation (SCT), and cognitive effort (CLT). The study creates empirically approach that hasn't been reported in the literature before. The data is projected from interviews and coded thematically to comprehend learners’ motivation. Then a framework is shaped of the learners’ motivation type as unique profiles that capture the complex relationship between psychological necessities, socio-cultural maintenance, and the management of cognitive load.

There are philosophical and empirical justifications for this triangulated framework. SDT, SCT, and CLT theoretically provide complementary lenses that capture different but related aspects of learner engagement: SDT explains the nature and source of motivation, SCT places that motivation in relational and cultural contexts, and CLT takes into

consideration the ways in which cognitive architecture affects persistence and strategy use. Methodologically, by enabling cross-validation of emergent themes across the psychological, social, and cognitive domains, triangulation improves the depth and reliability of analysis. Such integration is necessary to fully capture the complexity of AI-mediated learning in EFL environments with limited resources, where learner behaviour is influenced by overlapping restrictions. This approach offers a transportable model for future study on technology-enhanced pedagogy in addition to enriching interpretation.

The creation of thematic codes (autonomy support, guided interaction, and load management), semi-structured interview protocols (questioning need satisfaction, social mediation, as well as perceived cognitive effort), and interpretive analyses that connect participant narratives to more general theoretical frameworks are all influenced by this tripartite framework. This will lead to realization that motivation in relation to the use AI are initiated in theory, yet sensitive to contextual, sociocultural, and personal differences.

5. 3. Conceptual framework:

The current study tests the influence of AI technologies on EFL learners' motivation in limited- resource backgrounds. The study integrates three theories to create a multilateral conceptual framework. The foundation of motivation in this study are provided by SDT (Deci & Ryan, 1985), which emphasises the learners' psychological anxieties of autonomy, relatedness, and competency. SDT conceptualises motivation as a full continuum that ranges from amotivation to intrinsic motivation. In another level, SCT (Vygotsky, 1978) locates motivation within social interaction activities. It emphases how cooperation, teacher's support, and peers and culture norms intermediate learners' activity and engagement. Last but not the least, to comprehend the strategies used by EFL learners' to control mental capacity during AI-mediated activities, CLT (Sweller, 1988) offers a cognitive lens to distinguish three levels of load; intrinsic, extraneous, and relevant load. Together, these theories present a multidimensional representation of motivation. In this study motivation cannot be realised as a statistic characteristic, rather it is a dynamic result influenced by cognitive processing, inner regulation, and socio-cultural intermediation. The study used an integrative approach to develop a coding matrix and thematic analysis. The matrix facilitated

conducting precise valuation of the learners' use AI tools across their motivational profiles. Figure (1) demonstrates the conceptual framework, it also demonstrates how the investigation is directed to determine EFL learners' motivational experiences in an environments defined as having restricted resources when using AI tools.

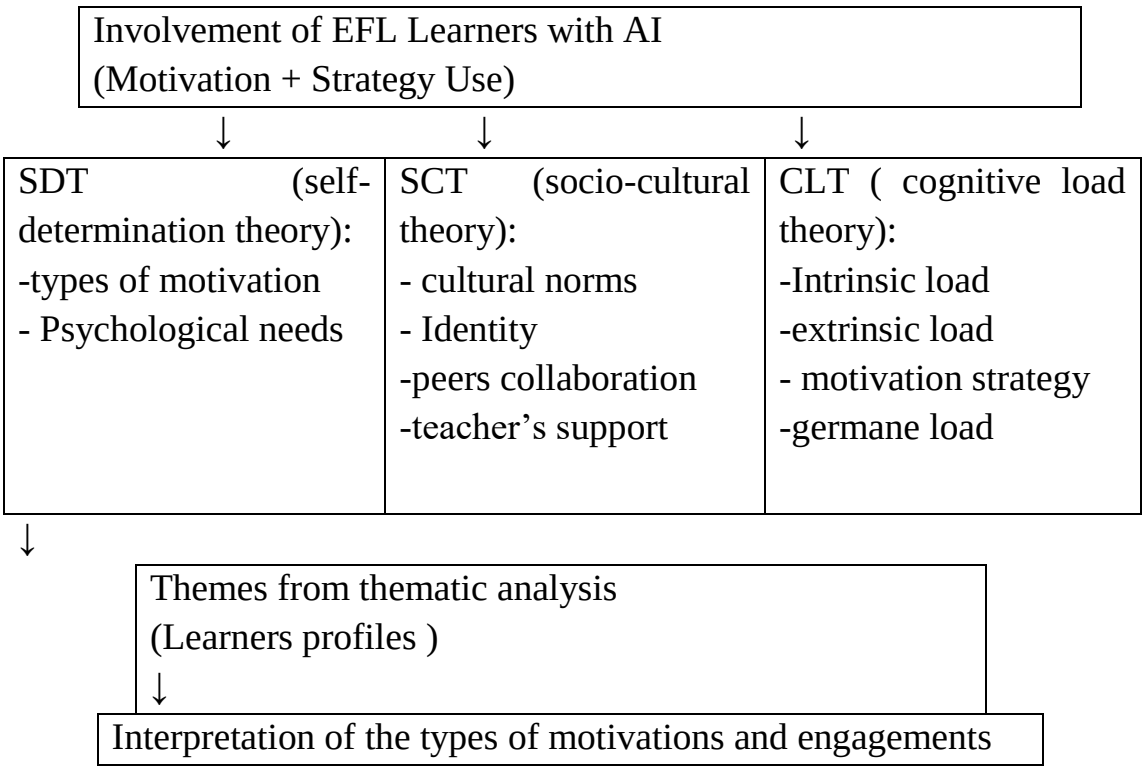

Figure 1: Integrated conceptual framework showing how the three theories; SDT, SCT and CLT, outline learners' motivations to use AI. At its core, the paradigm illustrates how environmental factors and AI-mediated instruction interact to create learner motivation's intrinsic and extrinsic dimensions, while also pointing out potential obstacles that could mitigate these effects.

6. Research Methods

According to the statement of the problem, which focuses on the motivational effects of AI tools on EFL learners in a digitally limited environment, a qualitative method is best suited to capturing the varied and context-sensitive experiences.

The diversity and depth of the participant's lived experience are more important in phenomenological research than the quantity of data (Moustakas, 1994; Creswell, 2013), therefore, fifteen EFL students from the University of Zakho are the participants in this study, which aims to

investigate learners' motivational orientations and views of the use of AI tools to learn English. The individuals were purposively chosen to represent differences in digital access, proficiency and experience to AI technologies. The sampling varied across: Low, medium, and high levels of digital literacy. In addition to investigating the conditions of access (reliability against restricted availability of devices or the internet). For ethical reasons information leaflet outlining the goal, voluntary nature, confidentiality, and data use, was given to participants.

Depending on participant preference and connectivity, the interview logistics mode may be in-person or online (Zoom). 45 to 10 minutes in length were recorded and fully transcribed in either Arabic, Kurdish or English, depending on participant familiarity. Afore that and to improve the format and sequence of the questions, three pilot interviews were conduct.

The interview focusses on the use of ChatGPT, Duolingo, Grammarly, and other similar programs, it also examines apparent motivational impacts (autonomy, confidence, engagement), as well as contextual problems and barriers (infrastructure, relevance, language support).

A number of strategies were used to make sure that this phenomenological investigation stays grounded in participants' reality, fair in its decision-making, and unresponsive to researcher bias;

Verifying members by summarising the interpretations following the initial coding and theme creation, then distributing these to a selection of participants (for example, 10%) to check if these summaries accurately represent their experiences. This will allow participants to have their own voice and clarify anything they might not have understood. When participants understand how their contribution influences the analysis, ethical reciprocity will rise and the understanding will increase,

Keeping a reflective journal to write down all the details and to document notes on the emotional responses, developing engagements, and theoretical expectations. The journal also take in every coding decision to display why an excerpt is classified under certain code, and how and why the codes were joint or separated. In addition, any methodological adjustment must be documented to permit readers or external examiners to trace every single finding back to the raw data and comprehend how the conclusions were reached.

Arranging frequent meetings to discuss the developing codes, thematic maps, and example quotes with a reliable colleague who is not immediately working on the project. Peers aid in refining themes and minimising personal bias by pointing out blind spots or alternative readings, challenging interpretations, and providing fresh angles or contradictions.

The semi-structured collecting of the data allows for in-depth analysis while preserving participant consistency. In addition the collection will adhere to culturally sensitive and ethical guidelines.

The Interview protocol is divided into six sections: Background and use of AI tools, Theory of Self-Determination (need satisfaction), Social Mediation in Sociocultural Theory, the Theory of Cognitive Load (perceived mental effort), Contextual supports & barriers, and final thoughts.

The coding schema was derived from the three theories, while the thematic analysis was developed according to Braun and Clarke (2006), therefor this study is both inductive (data-driven) and deductive (the theoretical anchor SDT, SCT, or CLT).

Braun and Clarke's (2006) methodology is used for the thematic analysis, starting with an exhaustive familiarisation procedure to study the data for a sharp findings. Each and every record was read a number of times to take reflexive notes. For example, one participant said that "Choosing grammar activities in ChatGPT made me feel in control," was a direct sign of autonomy support. Deductive labels from SDT (autonomy, competency), SCT (socio-cultural mediation), and CLT (overload causes) were joint with inductive codes that settled logically, like "trust in AI feedback" or "cultural mismatch," in the initial coding process. Then the codes were join together in probable themes. To make sure that every theme represent a unique motivational type, their internal coherence and theoretical correspondence were examined. Peer examination assisted to make the final definitions clear, which were strengthened by the narratives of the participants. The multidimensional procedure ensured grounding all the themes in a genuine experience and relating them to the tripartite theoretical framework.

7. Findings and discussions

The researcher used the proposed multi-theory framework (SDT, SCT, and CLT) to recode the responses of fifteen participants after reviewing

them. The coding structure and a summary of significant patterns to support a thematic analysis are shown below.

Table 1: Patterns of students responses

Participant	Motivation Type	SDT Constructs	SCT Indicators	CLT Indicators	Interpretive Notes
P 1	Intrinsic	Autonomy, Competence	None	Germane load, Simplification	Uses ChatGPT independently; adapts feedback for clarity; no peer interaction
P 2	Mixed	Autonomy, Competence	Reduced help-seeking	Simplification	Uses AI during exams; avoids teacher contact; values efficiency
P 3	Mixed	Competence	Reduced peer collaboration	Extraneous load, Germane load	Confident from feedback; critiques group reliance; experiences overload
P 4	Mixed	Competence	Teacher scaffolding	Germane load	Uses AI for seminars; conflicted about "cheating"; values constructive feedback
P 5	Intrinsic	Autonomy, Competence, Relatedness	Peer sharing, Teacher scaffolding	Extraneous load, Instructional clarity	Shares AI output; collaborative use; overload but benefits from structured feedback
P 6	Intrinsic	Autonomy, Competence	None	Germane load, Simplification	Uses ChatGPT to clarify questions; adapts

					feedback; no social mediation
P 7	Intrinsic	Autonomy, Competence, Relatedness	Peer collaboration, Teacher scaffolding	Extraneous load, Instructional clarity	Uses AI with classmates; adapts long feedback; competes and shares
P 8	Intrinsic	Autonomy, Competence, Relatedness	Peer collaboration, Teacher scaffolding	Extraneous load, Germane load	Uses AI to teach peers; discusses output; adapts feedback for focus
P 9	Mixed	Competence, Relatedness	Peer comparison, Teacher praise	Extraneous load	Feels superior to peers with less access; overwhelmed by feedback
P 10	Extrinsic	Relatedness	Peer collaboration, Teacher scaffolding	Extraneous load	Limited access; relies on peers; overwhelmed; wants offline tools
P 11	Intrinsic	Autonomy, Competence	None	Germane load	Uses AI for curiosity and self-improvement; no social mediation
P 12	Mixed	Competence	Peer sharing	Extraneous load	Shares AI output but feels confused by feedback volume
P 13	Intrinsic	Autonomy, Competence	Teacher scaffolding	Germane load	Uses AI to revise essays; values teacher integration and feedback clarity
P 14	Mixed	Competence, Relatedness	Peer collaboration	Extraneous load	Uses AI with peers but feels cognitively burdened by feedback

P 15	Extrinsic	External regulation	Peer comparison	Extraneous load	Uses AI to match peers; driven by performance pressure; overwhelmed

In align with Braun & Clarke's (2006) phases, five different profiles of learners were produced by thematic analysis of interview data; these profiles each represented a different constellation of cognitive, social, and motivational engagement with AI tools. To enhance these themes, record-keeping and cross-case comparisons were used recurrently, which were created using a hybrid coding approach that mapped the responses to categories from Self-Determination Theory (SDT), Sociocultural Theory (SCT), and Cognitive Load Theory (CLT).

Table 2: Types Learners' Profiles

Them	Description
1. Autonomous Strategists	Participants in this group (such as P 1, P 6, and P 11) showed both germane cognitive processing (CLT) as well as high autonomy and competence (SDT). They used AI technologies in a self-directed and personally driven manner, frequently integrating autonomous research and strategic feedback adaption. Instead of employing AI to satisfy demands from outside sources, these students demonstrated integrated or intrinsic regulation.
2. Socially Supported Learners	This group (e.g., P 5, P 7, P 10) demonstrated competence and relatedness (SDT) but also relying significantly on peer collaboration (SCT) and instructor scaffolding. Relational support, classroom standards, along with a desire to live according to perceived expectations were the main factors that influenced their motivation. Socially mediated learning involved the use of AI tools, frequently in conjunction with feedback from peers or teachers.
3. Performance-Based Comparators	P 9, P 14, and P 15 were among the participants who used AI technologies mainly to perform on par with or better than their classmates. Their answers revealed frequent an additional burden (CLT), limited autonomy, and decreased help-seeking (SCT) due to peer comparison. In contrast to self-interest or mastery, motivation in this group was controlled by outside factors, such as grades, competitiveness, or social approval.
4. Navigators with Overloaded Cognitive Functions	Learners in this theme (e.g., P 3, P 4, P 12) exhibited low germane processing (CLT) and high levels of extraneous load, frequently with poor autonomy and competence (SDT). They were disinterest to use AI tools, usually confused, or have cognitive stress. They found it difficult to effectively integrate AI views into their daily routines of learning, which suggests that their motivation was

	either superficial or indifferent.
5. Flexible Simplifiers	The last group (P 2, P 8, and P 13, for example) were selective to use AI feedback because they need to save effort but not at the expense of proficiency. Their responses demonstrated a practical approach to learning, which reflected identified regulation (SDT) and a need to simplify the means (CLT). Thy used AI tools to reduce cognitive load without compromising concert because they appreciated clearness and efficiency.

Having five emerging profiles state that the learners' interactions with AI in EFL classrooms are shaped by psychological, social, and cognitive causes rather than being influenced by a single dominant element. The current findings demonstrate consistent cross-cutting patterns (whereas previous work often isolates one explanation, such as autonomy gains, workload effects, or social dynamics): (a) motivation quality (SDT) determines the orientation towards AI use; (b) social processes (SCT) shape how motivation is sustained and expressed in situ; and (c) cognitive architecture (CLT) limits whether engagement is generative or merely performative. By showing how specific combinations of SDT, SCT, and CLT result in unique learner trajectories, this triangulated discovery complements and extends calls for integrative frameworks in recent assessments of AI in language teaching (Kundu & Bej, 2025).

Productive theory alignment is best exemplified by autonomous strategists. These learners integrated cognitive methods that supported relevant processing with high felt proficiency and autonomy; instead of imposing superficial shortcuts, AI acted as a cognitive partner that expanded problem–solution spaces. This is consistent with system-based and experimental findings that AI-enhanced interfaces can boost learner autonomy and cognitive engagement when they are designed to minimise unnecessary elements and encourage exploration (Hong & Guo, 2025). In terms of mechanism, autonomy generated intrinsic interest, which in turn encouraged prolonged effortful processing. The AI tool's affordances (controllable feedback, explanation choices) subsequently made it possible for learning to occur instead of cognitive fatigue.

How social support changes the motivational profile of otherwise unsure or outwardly focused students is demonstrated by socially supported learners. Peer discussion and guidance from instructors provided relational validation and strategic use modelling, which helped many in this group transform excluded or detected regulation into more stable participation. The results of Alfaleha et al. (2025) regarding how gender,

skill level, and study level influence AI engagement are relevant here: social structures (teacher cues, classroom norms) strengthen or weaken identified regulation differently for different learner subgroups. In reality, scaffolding enhanced deeper adoption by reducing uncertainty regarding tool use, managing intrinsic cognitive demands, and establishing shared normative regulations.

Comparison based on peer performance and achievement pressure drove the external regulation of comparers. Their involvement was characterised by a high unnecessary load and was reactive and frequently superficial. Boguslawski et al. (2025) noted similar trends in programming learning, where generative AI tools exacerbated competitive behaviours and performance anxiety. The results suggest that AI may enhance extrinsic motivation by chance, when the engagement is at surface-level and deliberate structuring in the absence.

On the other hand, the navigators who are overloaded cognitively reveal that AI tools function as a limiting factor. What hindered these learners the most was that they feel that multi-step activities are needless load which required additional working memory, and that AI feedback is incapable to support them. A similar results of learners' anxiety was reported by Koroleva and Jogezai (2025) about generative AI. The authors believe that such concern can lead to avoidance of using AI tools or deal with it at surface-level, mainly when the get unclear or large output. The results in this study made use of previous investigation by relating cognitive overload directly to alterations in the quality of motivation, because learners' sense of competence and autonomy deteriorate by continued cognitive overload. Such condition can amotivated or they submit unenthusiastically. This result highlights how issues related to designing curricula are actually motivational dangers when overlooked, such as giving too much information or when the possibilities are ambiguous.

Adaptive or flexible simplifiers' type of learners, occupy a pragmatic centre ground. They typically complicate linear interpretations of motivation. For the sake of completion and displaying their abilities, these learners determinedly lessened complexity of the AI output by filtering or summarising it. In a similar manner, Chen et al. (2025) noted selective adoption among students who matched perceived usefulness and ethical wellbeing with depth of use. Adaptive simplifiers are not just

lacking; they embody placed rationality. Simplifying is an adaptive regulator that maintains engagement and performance in situations where cognitive or contextual resources are scarce. In theory, this emphasises that some "surface" methods should be viewed as contextually reasonable reactions rather than as agency failures.

When combined, the profiles demonstrate that AI is neither consistently demotivating nor motivating; rather, its impact varies according to the affordances provided, the social environment in which it is employed, and the cognitive costs associated with it. By providing micro-mechanisms that explain why certain treatments enhance autonomy while others worsen overload or competition, this finding extends Kundu and Bej's (2025) synthesis. It also supports Liu et al.'s (2025) worries about critical thinking by demonstrating that the way AI interacts with learners' motivational states and scaffolding will determine whether it promotes or inhibits deeper thinking.

8. Limitations and suggestions for future research

This study is influenced by a number of limitations, just like many qualitative investigations in developing countries. It uses cross-sectional interview data and self-reported accounts of learner–AI interactions, which record motivational states at particular times rather than developing patterns. The findings' transferability is also impacted by the selective sampling that takes place in a situation with limited resources. Alfaleha et al. (2025), who stress the necessity for comparative studies that look at institutional and cultural mediators of motivation, are concerned about these constraints. Furthermore, experimental designs that alter feedback formats—for example, complete output versus progressive disclosure—may be able to demonstrate causal relationships between learner engagement and AI design. The significance of domain-specific research is underscored by the findings of Boguslawski et al. (2025) and Chen et al. (2025), which also imply that motivational profiles may differ among domains (e.g., speaking, writing, programming). In order to better understand how AI tools affect learner motivation over time and in various circumstances, it is necessary to conduct longitudinal, comparative, and domain-sensitive research.

Conclusion

The study's findings indicate that the instructional potential of AI for EFL depends on how autonomy, social scaffolding, and cognitive manageability interact. By combining SDT, SCT, and CLT, we provide a condensed explanation model: deep engagement and integrated and intrinsic regulation are encouraged by autonomous, scaffolded, and cognitively optimised environments, whereas social comparison and cognitive overload drive learners towards external or amotivated states. This integrated account offers educators and designers practical approaches to promote fair, sustainable AI-mediated learning while also supporting current empirical research.

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Appendixes

The questions asked in the interview

The methodology guarantee that every question is an open-ended, experience-focused, and closely related to research questions and theoretical frameworks.

- Section A: Utilising AI Tools and Overall Experience

Goal: Become familiar with the tool and its context. Connected to all the questions of the research.

Q 1: "Can you explain how you use artificial intelligence (AI) tools like Grammarly, Duolingo, or ChatGPT to learn English?"

Question 2: "What is your most frequently used tool, and why?"

- Section B: Psychological Needs & Motivation (connected with SDT → RQ1)

Q 3: "Describe an instance where you felt in in control of your education after utilising an AI tool." (Autonym).

Q 4: "Have you ever received feedback from an AI tool that made you feel more capable or confident?" (Competency).

Q 5: "When you use AI tools, do you feel closer to your teachers or classmates? Could you provide an example? (Relatedness).

- Section C: Collaboration and Social Mediation (related to SCT → RQ3)

Q 6: Have you ever collaborated with a teacher or a peer to use an AI tool? How did that experience go?

Q 7: In what ways do AI tools enhance or modify your social interactions while you're learning?

- Section D: Processing & Cognitive Effort (related to CLT → RQ3)

Q 8: Have you ever been overwhelmed by the size or complexity of an AI tool's feedback? (Additional Load).

Q 9: What aspects of AI technologies improve your ability to concentrate or comprehend when completing learning tasks? (Germane Processing).

- Section E: Barriers & Contextual Restraints (RQ2)

Q10: What difficulties, such as internet or language barriers or tool relevance, have you encountered when utilising AI tools?

Q11: Do you think the examples or substance in these resources align with your educational or cultural background?

- Section F: Thoughts and Feedback

Wrap-up connected to RQ 4

Q 12: In general, how has your drive to learn English changed as a result of employing AI tools?

Q 13: How may these resources be improved to better serve students like you?