Artificial Intelligence and Autonomous EFL Learning: A Mixed-Methods Study of Libyan University Students

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Abstract

This study investigates Libyan university EFL students' attitudes toward AI as a support for autonomous English learning and identifies the main challenges affecting its effective and responsible use. A mixed-methods approach was adopted, combining quantitative and qualitative data from 100 undergraduate EFL students at Sabratha University and semi-structured interviews with 10 students**.** Quantitative data were analysed using descriptive statistics and Cronbach's alpha, while interview data were analysed thematically...

Findings revealed widespread and generally positive use of AI, particularly conversational tools such as ChatGPT. Students perceived AI as useful for exploring topics, managing learning, and correcting errors. However, they viewed autonomy as supported independence rather than independence from teachers, recognizing AI as a learning scaffold rather than a replacement for teacher guidance. The most significant challenge was the lack of clear university guidance and training on AI use, alongside concerns about accuracy, privacy, and internet connectivity. Qualitative findings highlighted critical verification, the tension

between productivity and dependency, and ethical and affective concerns.

The study concludes that AI-assisted autonomy in the Libyan EFL context requires learner agency, teacher guidance, institutional AI literacy, clear ethical policies, reliable infrastructure, and critical evaluation of AI-generated content**.**

Keywords: artificial intelligence; learner autonomy; autonomous learning; EFL; self-directed learning; Technology Acceptance Model.

المستخلص:

تبحث هذه الدراسة في اتجاهات طلبة الجامعات الليبية الدارسين للغة الإنجليزية كلغة أجنبية(EFL) نحو توظيف الذكاء الاصطناعي بوصفه وسيلة داعمة للتعلم المستقل للغة الإنجليزية، كما تحدد أبرز التحديات التي قد تؤثر في استخدامه بصورة فعالة ومسؤولة. واعتمدت الدراسة منهجًا مختلطًا يجمع بين البيانات الكمية والنوعية، بمشاركة 100 طالب من طلبة المرحلة الجامعية في اللغة الإنجليزية كلغة أجنبية بجامعة صبراتة، إلى جانب إجراء مقابلات شبه منظمة مع 10 طلاب .وحُللت البيانات الكمية باستخدام الإحصاءات الوصفية ومعامل ألفا كرونباخ، بينما خضعت بيانات المقابلات للتحليل الموضوعي.

أظهرت النتائج انتشار استخدام الذكاء الاصطناعي واتخاذ الطلبة موقفًا إيجابيًا منه بصورة عامة، ولا سيما الأدوات الحوارية مثل .ChatGPT وأدرك الطلبة قيمة الذكاء الاصطناعي في استكشاف الموضوعات، وتنظيم عملية التعلم وإدارتها، وتصحيح الأخطاء. ومع ذلك، لم ينظروا إلى الاستقلالية باعتبارها انفصالًا عن المعلمين، وإنما باعتبارها استقلالية مدعومة بالتوجيه، **حيث** اعتبروا الذكاء الاصطناعي سقالةً تعليمية تساعد على التعلم، وليس بديلًا عن توجيه المعلم. وتمثل أبرز تحدٍ في غياب التوجيه والتدريب الجامعي الواضح بشأن استخدام الذكاء الاصطناعي، إلى جانب المخاوف المتعلقة بالدقة والخصوصية والاتصال بالإنترنت. كما كشفت النتائج النوعية عن أهمية التحقق النقدي من

مخرجات الذكاء الاصطناعي، والتوتر بين زيادة الإنتاجية واحتمال الاعتماد عليه، فضلًا عن المخاوف الأخلاقية والوجدانية.

وتخلص الدراسة إلى أن الاستقلالية المدعومة بالذكاء الاصطناعي في سياق تعليم اللغة الإنجليزية كلغة أجنبية في ليبيا تتطلب تضافر فاعلية المتعلم، وتوجيه المعلم، ومحو الأمية المؤسسية في مجال الذكاء الاصطناعي، ووضع سياسات أخلاقية واضحة، وتوفير بنية تحتية موثوقة، وتنمية القدرة على التقييم النقدي للمحتوى الذي ينتجه الذكاء الاصطناعي.

1. Introduction

Artificial intelligence has moved rapidly from a specialised technological field into an increasingly visible component of educational practice. In English as a Foreign Language (EFL) education, conversational agents, automated writing evaluation, translation systems, adaptive applications, speech technologies, and generative AI can provide learners with immediate explanations, feedback, examples, language practice, and access to learning resources. These affordances are particularly significant in EFL settings, where classroom time may be insufficient to provide sustained individualised practice and where learners often need opportunities to continue developing their language outside formal instruction (Luckin et al., 2016; Crompton et al., 2024).

The educational significance of AI, however, cannot be reduced to technological access. Learner autonomy is fundamentally concerned with responsibility and control over learning. Holec (1981) conceptualised autonomy as the capacity to take charge of one's learning, while Little (1991) emphasised the learner's relationship with the process and content of learning. Benson (2011) subsequently developed autonomy as a multidimensional capacity involving control over learning decisions, resources, and processes. Self-directed learning offers a complementary perspective, emphasising learners' initiative in diagnosing needs, setting goals, identifying resources, selecting strategies, and evaluating outcomes (Knowles, 1975). Thus, an AI-enabled learning environment can only be considered autonomy-supportive when learners remain responsible for decisions, evaluation, reflection, and regulation.

AI can potentially strengthen these capacities. A learner may ask a conversational system to explain a difficult grammatical structure, generate practice questions, simulate a conversation, provide alternative examples, brainstorm ideas, or comment on a draft. Automated writing assistants can identify language problems and provide immediate feedback, while translation and dictionary applications can support comprehension and vocabulary development. Recent studies report positive relationships between AI-supported language learning and achievement, motivation, self-regulated learning, engagement, enjoyment, and willingness to communicate (Wei, 2023; Huang et al., 2023; Zhang et al., 2024; Yuan & Liu, 2024). Systematic evidence also identifies affordances across speaking, writing, reading, pedagogy, and self-regulation (Crompton et al., 2024; AlTwijri & Alghizzi, 2024).

At the same time, AI-assisted learning presents a fundamental paradox. The same technology that reduces barriers to independent learning can also make passive dependence easier. When learners use AI to generate answers without questioning, checking, or reflecting on the output, the technology may weaken rather than strengthen learner agency. Accuracy, privacy, academic integrity, unequal access, and uncertainty about acceptable institutional use further complicate AI adoption (Polakova & Klimova, 2024; UNESCO, 2023). Effective AI use therefore depends not simply on frequency of use but on the purpose, quality, and regulation of that use.

This issue is particularly important in Libya, where empirical research on AI-supported EFL learning is emerging but remains relatively limited. Existing Libyan studies have examined teacher beliefs about learner autonomy, teachers' perceptions of AI, postgraduate students' use of AI for academic writing, and AI-supported personalised learning among EFL undergraduates (Algwil, 2024; Almashrgy & Alburki, 2024; Ahmed & Benkora, 2025; Hmouma, 2026). However, fewer studies have examined undergraduate EFL students' broader attitudes toward AI as an assistant for autonomous learning while simultaneously investigating the institutional and ethical conditions that shape such use.

The present study addresses this gap by examining EFL students at Sabratha University in western Libya. It combines quantitative evidence of AI use and

acceptance with qualitative accounts of how students negotiate autonomy, trust, verification, dependency, and institutional support.

1.1 Research questions

RQ1. What are Libyan EFL students' attitudes toward the use of AI tools to enhance autonomous English learning?

RQ2. What challenges do Libyan EFL students face when integrating AI tools into their learning practices?

1.2 Significance of the Study

The significance of the study lies in its potential to inform the responsible integration of AI into EFL education in Libya. By examining students' attitudes, learning practices, and challenges, the study provides evidence that can help university teachers understand how AI can support learner autonomy without replacing teacher guidance or weakening students' responsibility for learning. The findings may also assist universities and educational policymakers in developing appropriate AI-literacy programmes, institutional guidelines, ethical policies, and support mechanisms for students and teachers. More broadly, the study contributes context-specific evidence to the growing literature on AI-assisted language learning by clarifying the conditions under which AI can function as a learning scaffold while maintaining learner agency, critical evaluation, and responsible educational practice.

2. Literature Review and Theoretical Framework

2.1 Learner autonomy and self-directed learning

Learner autonomy is a foundational concept in language education. Holec (1981) defined autonomy as the ability to take charge of one's learning, including decisions about objectives, content, progression, methods, and evaluation. Little (1991) stressed that autonomy does not mean isolation; it involves responsibility, reflection, and a psychological relationship with the learning process. Benson (2011) similarly conceptualised autonomy as control over important aspects of learning that can be developed through appropriate pedagogical conditions.

Self-directed learning (SDL) complements this perspective. Knowles (1975) described SDL as a process in which learners take initiative in diagnosing learning needs, formulating goals, identifying resources, selecting learning

strategies, and evaluating outcomes. Research on virtual and technology-mediated learning likewise emphasises agency, strategic resource use, and reflection (Ramos Vera et al., 2021; Suyo-Vega et al., 2021; Tanasă et al., 2023). Within AI-assisted learning, these perspectives imply that access to an AI system does not automatically make a learner autonomous. Learners must know when AI is appropriate, how to formulate effective requests, how to interpret outputs, how to identify limitations, and when to verify or reject generated information.

The motivational dimension is also relevant. Self-determination theory identifies autonomy as a basic psychological need associated with intrinsic motivation (Deci & Ryan, 2000). AI may support this need when it gives learners meaningful choices over topics, pace, resources, and learning activities. However, if AI removes cognitive responsibility by doing tasks for the learner, apparent convenience may coexist with weaker agency.

2.2 Technology Acceptance Model

The Technology Acceptance Model (TAM) provides a useful framework for interpreting students' acceptance of AI. Davis (1989) proposed perceived usefulness and perceived ease of use as central determinants of technology acceptance. Later technology-acceptance models expanded the framework by incorporating social, cognitive, affective, and contextual variables (Venkatesh et al., 2003). Recent research indicates that TAM remains relevant to AI adoption in educational contexts. Abdaljaleel et al. (2024) found that usefulness, ease of use, technological attitudes, social influence, anxiety, and perceived risk were associated with university students' ChatGPT use, while Korkmaz and Akbıyık (2024) reported generally positive attitudes toward AI among tertiary EFL learners. Dehghani and Mashhadi (2024) likewise demonstrated the relevance of an extended TAM perspective to ChatGPT acceptance in EFL teaching.

TAM alone, however, does not determine whether technology use is pedagogically desirable. A student may find an AI system useful and easy to use while employing it in ways that undermine learning. The present study therefore uses TAM as an interpretive lens rather than as a predictive structural model. Perceived usefulness, perceived ease of use, and intention to continue were measured, while learner autonomy and self-directed learning provided

the pedagogical framework for interpreting what students actually valued in AI use.

2.3 Artificial intelligence in EFL learning

AI in language education encompasses a range of technologies, including natural language processing, machine learning, conversational systems, automated writing evaluation, speech recognition, intelligent tutoring, translation, and generative AI (Kaplan & Haenlein, 2019; McCarthy et al., 1955). Their functions vary from grammar and spelling feedback to conversational practice, translation, pronunciation support, brainstorming, paraphrasing, summarisation, and adaptive practice.

Conversational AI systems such as ChatGPT can provide explanations, simulate dialogue, generate examples, support brainstorming, and respond dynamically to learner questions. Automated writing assistants such as Grammarly can identify grammatical, spelling, punctuation, and style problems. Paraphrasing systems such as QuillBot can expose learners to alternative formulations, while translation and dictionary systems support comprehension and vocabulary. AI-enhanced language-learning applications can additionally personalise practice and feedback. These functions create opportunities for learning beyond the classroom and can reduce the time required to obtain support.

Empirical studies support several of these affordances. Wei (2023) reported positive effects associated with AI-mediated language instruction on English learning achievement, L2 motivation, and self-regulated learning. Zhang et al. (2024) found benefits for enjoyment, willingness to communicate, and foreign-language anxiety in AI-supported speaking. Yuan and Liu (2024) identified positive effects on engagement, enjoyment, and motivation. Fathi and Rahimi (2024) highlighted the potential of AI-enhanced writing mediation, while Marzuki and Rusdin (2023) examined AI writing tools from teachers' perspectives. Amin (2024) investigated AI text-to-speech applications for pronunciation. Ozer and Kilic (2023) reported positive implications of AI-powered writing assistants for writing quality and autonomy.

Systematic reviews reinforce the potential but also the conditional nature of these benefits. AlTwijri and Alghizzi (2024) identified positive effects of AI integration on EFL learners' affective factors, while Crompton et al. (2024)

identified affordances across multiple language skills alongside technological breakdowns, limited system capabilities, fear, and language-standardisation concerns. Dai and Liu (2024) further show that students' perceptions of AI are shaped by their lived experiences of language learning, while Woo et al. (2023) highlight contradictions that can emerge when learners, teachers, and AI systems interact within a machine-in-the-loop activity system.

2.4 AI, autonomy, and dependency

The relationship between AI and autonomy is therefore neither inherently positive nor negative. AI can operate as a scaffold by helping learners overcome obstacles, organise tasks, obtain immediate feedback, and explore topics. Scaffolding is educationally valuable when it supports the learner's capacity to act independently rather than replacing that capacity (Reinders, 2018). A learner who first attempts a task, then uses AI to obtain feedback, compare explanations, or identify gaps may strengthen metacognition. Conversely, a learner who delegates the task entirely to AI and accepts the output without evaluation may reduce cognitive engagement.

This distinction is reflected in recent research. Wang and Li (2024) examined the relationship between AI use and university students' willingness for autonomous learning, while Huang et al. (2023) demonstrated the potential of AI-enabled personalised recommendations to affect engagement, motivation, and learning outcomes. Afzaal et al. (2023) similarly explored explainable AI-based feedback and recommendations for supporting self-regulation. These studies suggest that the educational value of AI depends on how learners interact with the technology and whether the design encourages reflection and regulation.

2.5 AI, affect, ethics, responsible use, and the Libyan context

AI-assisted learning also intersects with affective and ethical dimensions. Students may experience greater confidence because AI provides immediate, non-judgemental feedback, but they may also experience uncertainty about their own competence if they become dependent on automated assistance. Research has additionally considered motivation and anxiety (Ali et al., 2023; Syifauddin & Yuliansyah, 2023; Özer & Korkmaz, 2024). Academic integrity presents another challenge because generative and paraphrasing systems can blur the boundary between assistance and authorship. Privacy and data governance are similarly important, particularly when students enter personal

or sensitive information into commercial systems. UNESCO (2023) therefore advocates a human-centred approach to generative AI involving ethical, safe, equitable, and meaningful use.

These affective, ethical, and responsible-use concerns become particularly important in the Libyan EFL context, where institutional experience with AI-supported language learning is still developing. Accordingly, examining the emerging Libyan evidence is necessary to understand how these broader issues are reflected in students' actual learning practices and the forms of support available to them. Algwil (2024) examined Libyan EFL teachers' beliefs about learner autonomy, while Almashrgy and Alburki (2024) explored teachers' perceptions of AI in Libyan EFL classrooms. Ahmed and Benkora (2025) examined AI applications used by EFL postgraduate students at the Libyan Academy, including grammar correction, paraphrasing, brainstorming, summarisation, academic style, and organisation. Hmouma (2026) investigated AI-supported personalised learning among EFL undergraduates at the University of Zawia and maintained the importance of teachers alongside AI-supported learning. These studies provide an emerging local foundation but leave an important gap concerning undergraduate EFL students' broader attitudes toward AI as an assistant for autonomous learning. The present study responds to that gap by combining measures of adoption and technology acceptance with students' accounts of autonomy, verification, dependency, ethical concerns, and institutional support.

3. Methodology

3.1 Research design

A sequential explanatory mixed-methods design was employed. The quantitative phase was conducted first to establish broad patterns of AI use, perceived usefulness, perceived ease of use, autonomous-learning support, intention to continue using AI, and perceived barriers. The qualitative phase then used semi-structured interviews to explain, contextualise, and deepen the quantitative findings. This design is appropriate when numerical patterns require detailed participant accounts for interpretation (Creswell, 2014; Creswell & Plano Clark, 2018; Dörnyei, 2007).

3.2 Research context and participants

The study was conducted in the Department of English Language at Sabratha University in western Libya. The quantitative sample consisted of 100 undergraduate EFL students selected through convenience sampling. The sample was predominantly female (91%) and concentrated in the fourth year (70%). Ninety-seven participants reported regular internet access. Following the questionnaire phase, 10 participants were purposively selected for semi-structured interviews to provide varied and information-rich accounts of AI use. Interview participants were assigned identifiers S1–S10 to protect confidentiality.

Characteristic	Category	n	%
Gender	Female	91	91
Gender	Male	9	9
Academic year	First	9	9
Academic year	Second	6	6
Academic year	Third	15	15
Academic year	Fourth	70	70
Regular internet access	Yes	97	97
Regular internet access	No	3	3

3.3 Instruments and procedures

The questionnaire included demographic questions, overall AI-use frequency, tool-specific AI use, attitudes toward AI-supported independent learning, perceived usefulness, perceived ease of use, intention to continue autonomous use, and perceived challenges. Five-point response formats were used. The instrument was reviewed by three experts in Applied Linguistics and Educational Technology, and a pilot was conducted with 15 students who were excluded from the final sample. The interview guide explored students' experiences of AI use, evaluation of AI-generated feedback, autonomous learning practices, dependency, accuracy, privacy, academic honesty, and institutional guidance.

3.4 Data analysis

Quantitative data were analysed using frequencies, percentages, means, standard deviations, and Cronbach's alpha. Qualitative interview data were analysed thematically following the broad six-phase approach of Braun and

Clarke (2006, 2021), with coding principles informed by Saldaña (2021). Qualitative trustworthiness was considered in relation to Lincoln and Guba's (1985) principles, while Patton's (2015) approach informed purposive qualitative inquiry. Integration occurred at the interpretation stage by comparing quantitative patterns with qualitative explanations.

Internal-consistency estimates were α = .65 for AI and independent-learning support, α = .71 for perceived usefulness, α = .82 for perceived ease of use, α = .92 for intention to continue use, and α = .65 for perceived challenges/barriers. The two α = .65 scales are treated cautiously as exploratory/short scales rather than as evidence of highly robust measurement reliability.

3.5 Ethical considerations

Participation was voluntary and anonymous. Participants were informed about the purpose of the study and their right to withdraw, questionnaire responses were non-identifying, and interviewees were anonymised as S1–S10. The source materials report verbal consent and secure handling of research data. The source papers do not provide a formal institutional ethics approval number; this should be clarified with the relevant institution before journal submission if required by the target journal.

4. Results

4.1 Overall frequency and type of AI use

Response	n	%
Always	29	29
Often	41	41
Sometimes	24	24
Rarely	6	6
Never	0	0

Overall AI-use frequency was M = 3.94 (SD = 0.89). Seventy percent of students reported using AI tools often or always, and no participant selected never. This indicates that AI was already embedded in the learning practices of a substantial majority of respondents.

AI tool/category	M	Often/Always
ChatGPT / AI chatbots	4.06	76%
Google Translate	3.15	39%
Grammarly	2.82	33%
YouTube AI subtitles/translations	2.67	29%
AI dictionaries/translators	2.41	24%
QuillBot/paraphrasing	1.76	12%
Duolingo	1.65	6%

Conversational AI was clearly dominant. ChatGPT and other AI chatbots recorded M = 4.06, with 76% reporting often or always. Google Translate and Grammarly occupied a middle range, while Duolingo and QuillBot were substantially less used. The pattern suggests that respondents particularly valued flexible, responsive tools capable of addressing immediate learning needs rather than relying primarily on repetitive or specialised practice.

4.2 Construct-level attitudes and internal consistency

Construct	Items (k)	A	M	SD
AI and independent-learning support	8	.65	3.38	0.57
Perceived usefulness	5	.71	3.51	0.72
Perceived ease of use	5	.82	3.64	0.83
Intention to continue autonomous use	5	.92	3.54	0.94
Perceived challenges/barriers	8	.65	3.19	0.62

4.3 AI and autonomous-learning support

Item	M	SD
Study English without teacher help	2.90	0.96
Manage learning time/topic/pace	3.68	0.94
Explore topics of interest	3.88	1.07
Take responsibility for learning	3.25	0.84
Motivation to practise independently	3.32	0.94
Set personal English learning goals	3.54	0.97
Reflect on English progress	3.41	1.06
Cannot learn effectively without teacher even with AI	2.97	1.49

The composite mean for AI and independent-learning support was 3.38 (SD = 0.57). The strongest autonomy-related item concerned exploration of topics of interest (M = 3.88), followed by management of learning time, topics, and pace (M = 3.68). Goal setting (M = 3.54) and progress reflection (M = 3.41)

were also positive. By contrast, studying English without teacher help produced a lower mean of 2.90. These findings indicate that students associated AI more strongly with increased flexibility and learning control than with complete independence from teachers.

4.4 Perceived usefulness

Item	M	SD
Improve ability to learn English independently	3.75	0.96
AI feedback is helpful for independent learning	3.62	1.07
Correct mistakes and learn from them	3.72	0.99
Understand English better than books/printed materials	3.44	1.13
Use English without needing a teacher	3.03	1.17

4.5 Perceived ease of use and intention to continue

Ease-of-use item	M	SD
Easy to use for learning English	3.85	1.08
Can use without help from others	3.65	1.20
Simple and accessible	3.88	0.91
Confident trying new AI tools	3.63	1.04
Sometimes confusing/difficult to use	2.84	1.20

Intention item	M	SD
Continue using AI tools	3.56	1.11
Explore more AI tools for English	3.50	1.11
Recommend AI tools to other students	3.56	1.18
AI will play a major future role in English learning	3.49	1.05
Excited about new AI tools in future studies	3.57	0.95

4.6 Challenges and barriers

Barrier	M	SD	Top-two agreement
Interrupted internet connectivity	3.48	1.01	52%
Lack of technical skills	2.52	1.28	22%
No clear university guidance/training	4.35	0.94	83%
Preference for teacher-led learning	2.59	1.08	22%
Accuracy/reliability concerns	3.67	1.14	56%
Some tools unavailable in Arabic	2.70	1.16	22%
Internet data cost	2.81	1.14	37%
Privacy concerns	3.41	1.34	55%

The most prominent challenge was institutional rather than individual. Eighty-three percent agreed or strongly agreed that the university did not provide clear guidance or training on AI use (M = 4.35). Accuracy/reliability concerns were also substantial (M = 3.67; 56%), followed by interrupted internet connectivity (M = 3.48; 52%) and privacy concerns (M = 3.41; 55%). By contrast, only 22% identified lack of technical skills as a high-level barrier. This distinction is important: respondents generally appeared capable of accessing and operating AI tools, but lacked a clear institutional framework for using them pedagogically and ethically.

4.7 Qualitative findings

Theme 1: AI as a scaffold for autonomous learning

Participants consistently described AI as a support mechanism that helps them begin tasks, overcome difficulties, organise ideas, and maintain learning momentum. S1 described AI as useful when studying alone, while S5 explained that AI helped when they became stuck. S2 emphasised AI as a starting and organisational resource, and S8 described using ChatGPT to organise ideas during lesson preparation. Importantly, S7 positioned AI as providing direction rather than something to copy directly. The qualitative evidence therefore reinforces the quantitative finding that students valued AI most strongly for flexibility, exploration, and learning management.

Theme 2: Critical engagement and verification

Students did not demonstrate unconditional trust in AI-generated information. S1 reported checking potentially inaccurate information against lectures and academic sources, while S10 treated AI responses as guidance rather than final answers. S9 described attempting to think first and then using AI to support or confirm understanding. These practices suggest an emerging form of digital epistemic vigilance in which learners actively assess the credibility and relevance of AI output.

Theme 3: Productivity versus dependency

Participants recognised that AI could reduce effort and increase productivity, but they also identified a risk of over-reliance. S2 observed that it was easy to rely on AI instead of trying independently. S4 reflected on frequent AI use without sufficient awareness and expressed a desire to use it more deliberately. S6 articulated the central boundary succinctly: “AI should support my

learning, not control it." This theme captures the central autonomy paradox: AI can lower task-entry barriers while simultaneously making cognitive delegation more attractive.

Theme 4: Ethical and affective concerns

Academic honesty and confidence emerged as additional concerns. Participants recognised that AI could support confidence by making difficult tasks more manageable, but also that excessive assistance could make learners uncertain about their own abilities. Responsible AI use was therefore understood not simply as an issue of accuracy but also as a question of learner identity, academic responsibility, and legitimate educational practice.

4.8 Integrated mixed-methods interpretation

Quantitative pattern	Qualitative explanation	Integrated interpretation
High AI use; chatbot M = 4.06	AI is experienced as accessible and responsive.	Adoption is strongly connected to practical learning support.
Usefulness M = 3.51; ease of use M = 3.64	Students report immediate help, explanations, and flexible access.	TAM constructs are reflected in favourable acceptance.
Autonomy support M = 3.38; teacher-independence M = 2.90	Students retain a role for teachers and human guidance.	Autonomy is understood as supported responsibility rather than isolation.
Institutional guidance M = 4.35	Students report limited formal guidance on responsible AI use.	AI literacy and institutional policy are priority interventions.
Accuracy concern M = 3.67	Students verify outputs against lectures and academic sources.	Critical evaluation is a central autonomy skill.
Privacy M = 3.41; internet barrier M = 3.48	Students experience ethical and structural constraints.	AI integration requires infrastructure and responsible-use safeguards.

5. Findings and Discussion

The findings provide strong evidence of positive attitudes toward AI-assisted EFL learning among the Sabratha University students. Seventy percent reported frequent AI use, 76% reported frequent chatbot use, and perceived usefulness, ease of use, and intention to continue were all above the midpoint. This pattern is consistent with international evidence showing generally favourable attitudes toward AI among university and EFL learners

(Abdaljaleel et al., 2024; Korkmaz & Akbıyık, 2024; Polakova & Klimova, 2024).

The results also fit the logic of TAM. Students perceived AI as relatively easy to use (M = 3.64) and useful (M = 3.51), while intention to continue was positive (M = 3.54). The strongest ease-of-use indicators were that AI tools were simple and accessible (M = 3.88) and easy to use for English learning (M = 3.85). However, the results complicate a simple narrative of technological substitution. The low mean for learning without teacher help (M = 2.90) demonstrates that positive technology acceptance did not translate into a desire to eliminate teachers.

This distinction is consistent with contemporary understandings of learner autonomy. Holec (1981), Little (1991), and Benson (2011) do not define autonomy as the removal of teaching or social support. Instead, autonomy concerns the learner's capacity to make informed decisions, exercise responsibility, and regulate learning. The Sabratha students therefore appear to favour supported autonomy: they want greater control over pace, topics, resources, and immediate assistance while retaining teachers as sources of pedagogical judgement, validation, and contextual guidance.

One of the strongest findings was the association between AI and learning management. Students rated the ability to explore topics of interest at M = 3.88 and the ability to manage time, topic, and pace at M = 3.68. Interview evidence explains these scores by showing that students use AI to initiate tasks, organise ideas, and overcome cognitive barriers. This extends the interpretation of AI beyond correction: AI is integrated into earlier stages of learning, including deciding where to begin, identifying possibilities, and structuring tasks.

This pattern is compatible with self-directed learning theory (Knowles, 1975) because the learner remains responsible for identifying needs and deciding how to use the resource. It also resonates with research linking AI-supported learning with self-regulation, motivation, engagement, and willingness to learn autonomously (Wei, 2023; Wang & Li, 2024; Huang et al., 2023).

The qualitative findings reveal that students were not simply enthusiastic adopters. They recognised that AI outputs could be inaccurate and described checking information against lectures, textbooks, and academic sources. This corresponds with the quantitative accuracy concern (M = 3.67) and with wider

research identifying accuracy and responsible implementation as significant issues (Crompton et al., 2024).

Verification should be interpreted as more than a technical precaution. It is an autonomy practice because it requires learners to exercise judgement over information rather than accepting a system's output as authoritative. Effective AI literacy therefore includes prompt formulation, source evaluation, recognition of uncertainty, comparison with authoritative materials, privacy awareness, and academic-integrity judgement. UNESCO's (2023) human-centred guidance is consistent with this emphasis on meaningful, ethical, safe, and equitable use.

The most striking finding is the gap between high student adoption and low institutional support. Eighty-three percent of respondents agreed or strongly agreed that the university did not provide clear AI guidance or training, producing the highest barrier mean in the study (M = 4.35). This result shifts interpretation from individual-level technology adoption to the institutional environment in which adoption occurs.

The significance of this finding becomes clearer when considered alongside the 97% reporting regular internet access. The principal problem is therefore not simply whether students can access AI systems. Rather, it is whether they have an educational framework for using them effectively. Without institutional guidance, students must develop their own norms around acceptable AI assistance, academic integrity, citation and disclosure, privacy, verification, and the boundary between support and substitution.

The finding also extends the emerging Libyan evidence base. Ahmed and Benkora (2025) and Hmouma (2026) highlight the value of AI alongside the need for guidance, ethical boundaries, and continuing teacher involvement. The present study adds undergraduate student evidence suggesting that institutional guidance may be the most immediate condition required for turning widespread AI adoption into educationally valuable practice.

Institutional guidance was not the only challenge. More than half of participants reported concerns about AI accuracy and privacy, and 52% indicated that interrupted connectivity made consistent AI use difficult. These findings demonstrate that AI-assisted learning remains dependent on broader technological and governance conditions. The apparent flexibility of AI is constrained when access is unstable, and the convenience of AI can be

undermined when students are uncertain about data privacy or the reliability of generated information.

Universities therefore need to avoid promoting AI adoption without simultaneously establishing risk-management practices. Students should know what information should not be entered into AI systems, how to verify generated content, what AI-assisted practices are acceptable in assessed work, and how institutional policies apply to generative AI.

The central theoretical implication of the study is that AI-assisted autonomy is best understood as mediated autonomy. TAM helps explain why students accept AI: they perceive it as useful and easy to use. Learner autonomy explains what they value in that use: control over pace, topics, resources, and learning decisions. Self-directed learning explains the importance of competence, goal setting, strategy selection, evaluation, and regulation.

The qualitative evidence adds a further dimension: mediation. Students' autonomy is not located solely within the individual learner. It emerges through interactions among learner, AI system, teacher, academic sources, and institutional expectations. AI can increase the learner's capacity to act independently when it functions as a scaffold, but the quality of that autonomy depends on human judgement, teacher support, institutional guidance, and reflective regulation. This explains how students can simultaneously report high AI use and continued dependence on teachers without those positions being contradictory.

7. Recommendations for Future Research

Future studies should extend the research across multiple Libyan universities using larger and more balanced samples. Longitudinal research could examine whether AI use strengthens learner autonomy over time or gradually increases dependence. Experimental research could test whether targeted AI-literacy training changes verification behaviour, self-regulation, academic performance, and responsible-use practices. Research should also examine teachers' readiness, institutional policy, assessment design, and disciplinary differences. Comparative studies of AI-supported writing, speaking, reading, vocabulary, and pronunciation could determine whether perceived benefits and risks vary by language skill.

8. Conclusion

This study demonstrates that Libyan EFL students, represented by the Sabratha University sample, have embraced AI tools as accessible and useful resources for English learning, particularly conversational AI. Students generally perceive AI as easy to use, useful, and worth continuing to use. They value it especially for exploring topics, managing learning, correcting mistakes, organising tasks, and obtaining immediate support.

However, the findings reject a simplistic interpretation of AI as a replacement for teachers. Students' comparatively low endorsement of learning without teacher support, together with the interview evidence, indicates that they understand autonomy as responsibility and flexibility within a supported learning ecosystem. AI is most valuable when it functions as a scaffold that extends students' capacity to learn, rather than as a substitute for thinking, evaluation, or teaching.

The most important challenge identified by the study is institutional rather than simply technological. Students reported a pronounced lack of university guidance, alongside concerns about accuracy, privacy, and connectivity. The qualitative evidence further demonstrates that students are already negotiating the tension between AI-enabled productivity and the risk of dependency. Their emphasis on verification and independent thinking suggests emerging critical AI literacy, but this responsibility should not be left entirely to individual experimentation.

The study therefore proposes that effective AI-assisted autonomy in Libyan EFL education requires a partnership among learner, teacher, technology, and institution. AI should support learning rather than replace thinking; teachers should guide rather than control; and universities should provide the policies, infrastructure, and AI-literacy education required for responsible use. Under these conditions, AI can become a powerful scaffold within a more flexible, reflective, and learner-centred EFL learning ecosystem.

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