

Integrating Artificial Intelligence in Teaching English as a Foreign Language in Algerian Universities: Perceptions and Structural Challenges

التصورات والتحديات الهيكلية لتبني الذكاء الاصطناعي في التعليم العالي الجزائري لتعليم اللغة الإنجليزية كلغة أجنبية

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Abstract

This study examines perceptions, adoption patterns, and structural barriers to Artificial Intelligence (AI) integration in English as a Foreign Language (EFL) programs at Algerian public universities. It is situated within national digitization policies, particularly the “Zero Paper” strategy and promotion of English as a Medium of Instruction (EMI). The research also evaluates the applicability of the Technology Acceptance Model (TAM) in a resource-constrained setting. The study used a purposive sampling with 78 participants (28 EFL teachers and 50 undergraduate/postgraduate students), mainly from universities in Algiers and other major hubs. It employed a descriptive sequential explanatory design in which quantitative data were collected first through a structured questionnaire, followed by qualitative follow-up. Quantitative findings indicated high daily AI usage (60.3%) and strong perceived usefulness for personalized learning (78.9%). However, 61.1% reported complete lack of institutional infrastructural support. Unreliable internet and limited device access emerged as the primary barrier, far outweighing ethical or cultural concerns. A significant regulatory gap was evident: 62.5% of respondents were unaware of any institutional AI ethical policies, correlating with high plagiarism-related anxiety (74.3%). Qualitative

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thematic analysis revealed widespread “shadow adoption,” with individuals independently using AI tools due to institutional deficiencies. The study concludes that the digital divide in Algerian higher education has shifted from skill-based to infrastructure-based limitations. Sustained investment in reliable connectivity and robust ethical governance is essential to align national policy ambitions with classroom realities.

Keywords: Academic Integrity, Algerian Higher Education, Artificial Intelligence in Education, Digital Infrastructure Barriers, Technology Acceptance Model.

الملخص: تهدف هذه الدراسة إلى فحص التصورات وأنماط التبني والعوائق الهيكلية لدمج الذكاء الاصطناعي (AI) في برامج اللغة الإنجليزية كلغة أجنبية (EFL) بالجامعات العمومية الجزائرية. تندرج الدراسة ضمن السياسات الوطنية للرقمنة، وخاصة استراتيجية «الورق الصفري» وتشجيع استخدام الإنجليزية كلغة تدريس (EMI). كما تقيّم مدى ملائمة نموذج قبول التكنولوجيا (TAM) في بيئة تعليمية محدودة الموارد. أُجريت الدراسة خلال السنة الجامعية 2024–2025، واستخدمت عينة قصدية مكونة من 78 مشاركاً (أساتذة EFL وطلاب الليسانس/الماستر)، وتركزت بشكل رئيسي على جامعات الجزائر العاصمة وبعض المراكز الجامعية الكبرى. اعتمدت دراسة تحليلية وصفية: جُمعت البيانات الكمية أولاً عبر استبيان منظم، ثم تلتها متابعة نوعية. تضمن الاستبيان عناصر مقياس ليكرت لقياس بنيت TAM (الفائدة المدركة وسهولة الاستخدام المدركة) وأسئلة مفتوحة حول العوائق والدعم والقضايا الأخلاقية. أظهرت النتائج الكمية ارتفاع الاستخدام اليومي للذكاء الاصطناعي (60.3%) وقوة الفائدة المدركة للتعلم الشخصي (78.9%). ومع ذلك، أفاد 61.1% بغياب تام للدعم البنوي المؤسسي. برز عدم موثوقية الإنترنت ومحدودية الوصول إلى الأجهزة كالعائق الرئيسي، متفوقاً بكثير على الهموم الأخلاقية أو الثقافية. ظهرت فجوة تنظيمية واضحة: 62.5% من المشاركين لم يكونوا على علم بأي سياسات أخلاقية مؤسسية بشأن الذكاء الاصطناعي، وارتبط ذلك بقلق مرتفع من السرقة الأدبية (74.3%). كشف التحليل النوعي الموضوعي عن انتشار واسع لـ«التبني الظلي»، حيث يستخدم الأفراد أدوات الذكاء الاصطناعي بشكل مستقل بسبب النقائص المؤسسية. تخلص الدراسة إلى أن الفجوة الرقمية في التعليم العالي الجزائري انتقلت من قيود مهارة إلى قيود بنيوية تتعلق بالبنية التحتية. يتطلب الأمر استثماراً مستمراً في الاتصال الموثوق والحوكمة الأخلاقية القوية لمواءمة الطموحات السياسية الوطنية مع واقع القاعات الدراسية.

الكلمات المفتاحية: الذكاء الاصطناعي في التعليم، التعليم العالي الجزائري، نموذج قبول التكنولوجيا، عوائق البنية التحتية الرقمية، النزاهة الأكاديمية.

Introduction

The global academic landscape is undergoing a seismic shift catalysed by the rapid evolution of Artificial Intelligence (AI). This technological paradigm offers unprecedented opportunities for customization in language learning. As Kannadhasan and Amalraj (2025) observe, AI technologies encompass a broad spectrum of instruments and methodologies which can be utilized to customize education and facilitate diverse learning demands. Similarly, Velmurugan et al. (2026) argue that AI is revolutionizing teacher education by creating immersive learning experiences that simulate real classroom environments, thereby democratizing access to personalized tutoring. However, this transition is not merely technical but deeply pedagogical. Al-khresheh (2024) articulates this tension, noting that while education is undergoing a transformational transition in the 21st-century dynamic environment, every innovation raises several concerns regarding the preservation of human interaction and cultural nuance.

In the Algeria context, this technological wave intersects with a robust, top-down governmental push toward modernization. The Ministry of Higher Education and Scientific Research (MESRS) has mandated a "Zero Paper" strategy and the widespread digitization of university sectors to support the national transition toward English as a Medium of Instruction (EMI). However, implementing these high-level policy directives in everyday EFL classrooms remains highly challenging. While the potential of AI is widely recognized, there remains a noticeable scarcity of research specifically addressing AI and language pedagogy in the Algerian context (Hafidi & Kemouguette, 2025; Achili & Zerrouki, 2024).

This study addresses the urgent need to understand how stakeholders navigate the tension between the government's digital ambitions and the on-the-ground reality of limited resources. It aims to bridge the gap between top-down policy expectations and actual classroom practices by providing empirical data on how Algerian EFL stakeholders perceive these tools, the extent of AI integration, and the structural impediments hindering this integration.

This study seeks to answer the following straightforward questions:

1. How do Algerian EFL stakeholders perceive the usefulness of AI tools?
2. To what extent does the current digital infrastructure support or hinder AI integration, and is it a greater barrier than cultural resistance?

3. What are the ethical implications of AI usage in the absence of clear institutional policies in Algeria?

2. LITERATURE REVIEW

2.1 AI as a Catalyst for Personalized Learning

Current literature posits AI as a transformative tool for language learning, offering innovative solutions for enhancing language learning through adaptive systems. Abbasi et al. (2025) found that AI-based platforms significantly enhance English language learning by providing personalized learning experiences, real-time feedback, and increased student engagement. Their study underscores that students with prior experience in AI-assisted learning reported higher satisfaction and perceived effectiveness compared to those without prior exposure. Similarly, Francis and Subha (2024) note that AI technologies have been recently developed to create education materials that are suitable to the preferences of individual learners, making the acquisition of a language more personalized and efficient.

2.2 The "Infrastructural Chasm" in the Global South

However, a critical evaluation of existing scholarship reveals significant gaps when applied to the Global South. While studies in developed contexts focus on the optimization of software, research in developing nations must contend with the "External Facilitating Conditions" of the Technology Acceptance Model (TAM). Belhaddad (2025), investigating EFL teachers at Guelma University, found that while perceived ease of use influences perceived usefulness, the hypothesis that ease of use directly influences behavioral intention was only partially supported due to external variables such as internet access. This theoretical gap suggests that in Algeria, infrastructure acts as a gatekeeper to technology acceptance, a variable often overlooked in Western-centric studies.

2.3 Student Perceptions: Motivation vs. Anxiety

Furthermore, there is a distinct contextual gap in student perceptions. Vo and Nguyen (2024), in their study of Vietnamese students, found that learners often held neutral opinions on whether their English skills improved using ChatGPT due to a lack of guidance. In contrast, Mulalić et al. (2025) reported that students in Bosnia and Herzegovina viewed AI as valuable but expressed significant anxiety regarding inaccuracies, misinformation, and bias. This study seeks to situate Algerian EFL specificities within this global discourse.

To address the study's objectives, integrating AI into structured guidance programs could provide ethical oversight. Boutaraa and Soufi (2025) emphasizes that AI-driven counseling raises "fundamental questions about the effectiveness of these tools compared to traditional human interaction in psychotherapy, in addition to ethical challenges related to data privacy and user confidentiality" (p. 523). This aligns with the need for human supervision in Algerian EFL contexts, where institutional vacuums exacerbate anxiety.

2.4 The Ethical Imperative

Ethically, Binu (2024) warns that despite the numerous advantages of AI tools, they pose a serious threat to language acquisition as students widely misuse generative chatbots. This necessitates a localized investigation into whether Algerian students view AI as a tool for learning or a shortcut for plagiarism, particularly in the absence of the "fraud prevention" mechanisms advocated by Braknia et al. (2025). Additionally, Haddadi and Zidane (2024) emphasizes that teacher perceptions are critical, as resistance often stems not from technology itself, but from a lack of clear ethical frameworks.

2.5 AI in Psychological Guidance and Academic Advising

Recent scholarship extends AI's role beyond language pedagogy to psychological and academic guidance, particularly in resource-constrained environments like Algerian higher education. Boutaraa and Soufi (2025) propose a theoretical framework for AI-supported counseling programs, emphasizing integration of traditional methods to enhance accessibility. They argue that "artificial intelligence has transformed psychological counseling by enabling the development of programs that provide personalized support and instant responses" (p. 525). This is particularly relevant for EFL students facing linguistic and cultural barriers, where AI chatbots can offer round-the-clock support, reducing reliance on limited institutional resources.

Drawing on Carl Rogers' self-theory, which prioritizes human-centered growth, Boutaraa and Soufi (2025) highlight the need for AI to complement—rather than replace—human interaction. They note that counselors must ensure "unconditional respect and appreciation for the client, regardless of their appearance, thoughts, or the outcome of the counseling process" (Boutaraa & Soufi, 2025, p. 526, citing Palmer, 2000). In the Algerian context, this addresses the "digital paradox" by incorporating AI into academic advising, defined as "a structured communication channel between the student and the university,

helping the student formulate their goals and work towards achieving them" (Boutaraa & Soufi, 2025, p. 525). Such integration could mitigate barriers like unreliable infrastructure by leveraging personal devices for "shadow" guidance, aligning with TAM's external facilitating conditions.

This emerging area underscores the need for ethical frameworks to handle privacy and data security, preventing misuse in EFL settings where students may turn to unregulated AI for learning support.

3. METHODOLOGY

3.1 Research Design

In this study, a sequential explanatory descriptive design was applied to capture the complexity of AI use in education. The quantitative phase revealed patterns through a structured online survey, showing the prevalence of AI adoption and the intensity of perceived barriers. For instance, the survey quantified how frequently students and teachers rely on AI tools and measured the extent to which infrastructural challenges, such as unreliable Wi-Fi or limited access to devices, hinder integration. The qualitative phase complemented these findings by analyzing open-ended responses, which provided descriptive insights into the reasons behind the numerical trends. This combination allowed the study to present both the statistical distribution of behaviors and perceptions, as well as the contextual explanations that give meaning to the numbers.

3.2 Sample and Demographics

The sample consisted of 78 respondents drawn from English departments at several Algerian universities. As detailed in Table 1, the demographic composition reflects the gender and role distribution typical of Algerian EFL departments.

Table 1: Sociodemographic Profile of Respondents

Variable	Category	Frequency (N)	Percentage (%)
Gender	Female	58	74.4%

	Male	20	25.6%
Role	Student	55	71.4%
	Teacher	22	28.6%
Academic Level	First Year Students	25	31.6%
	Advanced/Master	27	34.6%
	Doctorate/Teachers (>5 yrs exp)	26	33.8%

(Source: Survey Data, Section A)

This diversity ensures that the findings reflect both the struggles of novices (first-year students) and the pedagogical concerns of experts (teachers with >5 years of experience).

3.3 Data Collection and Analysis

Data collection was conducted via a online questionnaire distributed through academic networks (Moodle, Social media and Colleague-to-colleague sharing). The instrument included Likert-scale items measuring Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) based on the TAM framework, and ranking questions regarding barriers to integration. Data analysis involved descriptive statistics (frequencies and percentages) for quantitative items and coding for qualitative responses to identify recurring themes such as "infrastructure," "ethics," and "pedagogy."

4. FINDINGS

The analysis of the data reveals a complex landscape where high personal motivation collides with institutional stagnation. The findings are categorized into four key themes.

4.1 Usage Patterns: The "Shadow Adoption" Phenomenon

The quantitative data reveals a phenomenon of "Shadow Adoption." As illustrated in Table 2, a significant majority of respondents use technology daily, yet this usage occurs largely outside the institutional framework.

Table 2: Frequency of AI Use vs. Institutional Support

Variable	Category	Percent age
Frequency of Technology Use	Daily	60.3%
	Weekly	21.8%
	Occasionally/Rarely	17.9%
Department Provides Support	Disagree / Strongly Disagree	61.1%
	Neutral	25.0%
	Agree / Strongly Agree	13.9%

(Source: Survey Data, Sections A & D)

The data reveals a stark disconnect between user engagement and institutional infrastructure. While an overwhelming majority of participants (60.3%) utilize digital tools on a daily basis, an almost identical proportion (61.1%) report a distinct lack of departmental support. This inverse relationship indicates that the integration of AI in the Algerian EFL context is currently a grassroots, student-led phenomenon rather than an institutionally guided strategy. Consequently, because students are forced to rely on their own personal resources—such as private mobile data and personal devices—to sustain this daily usage, the lack of

institutional scaffolding risks exacerbating a digital divide between those who can afford personal access and those who cannot.

4.2 Perceived Usefulness (PU) and Pedagogical Value

Respondents demonstrated high confidence in the utility of AI, particularly its capacity to facilitate personalized learning. This aligns seamlessly with the findings of Abbasi et al. (2025), confirming that the primary driver for AI adoption—even in resource-constrained environments like Algeria—is its ability to tailor educational content to individual learner needs.

Table 3: Perceived Usefulness of AI in English Education

Statement	Agree / Strongly Agree	Neut ral	Disagree / Strongly Disagree
AI provides personalized learning	78.9%	15.8 %	5.3%
AI improves accuracy	69.7%	17.1 %	13.2%
AI promotes learner autonomy	59.2%	26.3 %	14.5%

(Source: Survey Data, Section C)

Qualitative Insight:

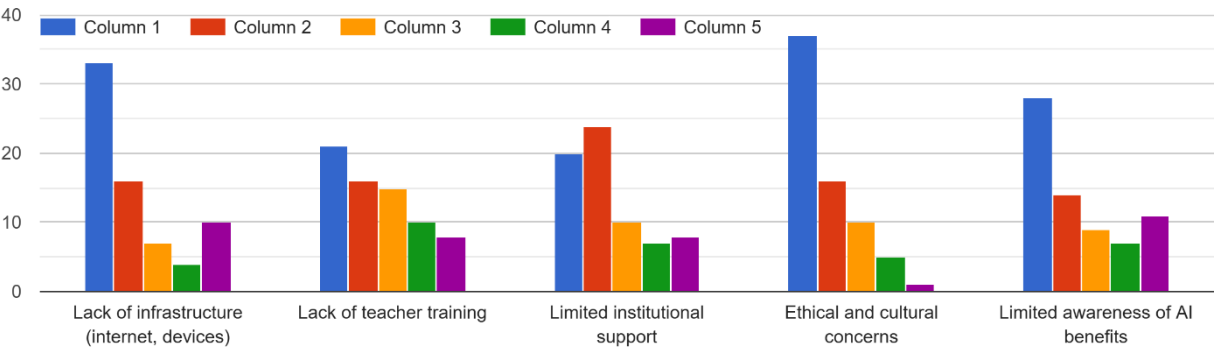
While the quantitative data showed optimism about "speaking accuracy" (69.7%), open-ended responses clarified a crucial pedagogical nuance. Users primarily value AI for writing mechanics but remain skeptical of its conversational ability. One respondent noted: *"It frees up the human teacher to do what they do best: have real conversations and help with all the tricky nuances that a machine just can't grasp."* This supports Al-khresheh’s (2024) critique that AI excels at text generation but has limitations in oral communication and human empathy.

4.3 The Infrastructural Chasm

When asked to rank barriers to AI integration, respondents unequivocally identified physical infrastructure as the primary obstacle, outweighing cultural or ethical concerns.

Ranked Barriers to AI Integration

G. Barriers to AI Integration Please rank the following barriers from 1 (most significant) to 5 (least significant):



(Source: Survey Data, Section G)

Figure analysis from the raw data confirms the severity of the deficit: 45.7% of respondents rate institutional resources (Wi-Fi, Labs) as "Insufficient" or "Very Insufficient." This finding is critical because it proves that the Algerian context cannot be evaluated through the same lens. While Mulalić et al. (2025) focus on the psychological barrier of anxiety, this study confirms that in Algeria, the barrier is physical. The "External Facilitating Conditions" of the TAM model are absent.

4.4 The Ethical Vacuum and Training Deficit

The survey revealed a profound regulatory vacuum regarding the ethical use of AI.

Table 5: Institutional Preparedness (Ethics & Training)

Variable	Category	Percent age
Awareness of Ethical Policies	No policies / Unaware of policies	62.5%
	Policies exist but are unclear	23.6%
	Clear policies exist	13.9%
Frequency of Professional Training	Never / No training provided	49.3%
	Rarely	22.5%
	Occasionally	28.2%

(Source: Survey Data, Sections E & F)

The survey reveals a profound regulatory vacuum regarding the ethical use of AI, which actively undermines its pedagogical potential. With 62.5% of respondents lacking awareness of any institutional policies and nearly half (49.3%) receiving zero professional training, universities are essentially leaving educators to navigate this technological shift unguided. This institutional silence directly explains why a staggering 74.3% view AI primarily as a vehicle for plagiarism. In the absence of official frameworks and training, educators feel disempowered—evidenced by qualitative concerns over the inability to 'differentiate between the works of AI and human work.' Consequently, a defensive 'stigma around AI' has emerged. Rather than being integrated as a learning aid, AI is framed almost exclusively as a threat to academic integrity, fostering a culture of suspicion in the classroom.

5. DISCUSSION

The findings significantly modify the application of the Technology Acceptance Model (TAM) for the Global South. Traditional TAM theory suggests that *Perceived Usefulness* (which is high at 78.9% in this study) is the primary driver of adoption. However, this study demonstrates that External Facilitating Conditions (infrastructure) are a stronger predictor of *formal* adoption.

The fact that 45.7% of users rate resources as insufficient explains the "Shadow Adoption" phenomenon. Students and teachers are bypassing the university's "Zero Paper" infrastructure because it does not exist functionally. This aligns with Belhaddad (2025), confirming that without the "bottom layer" of connectivity, high motivation cannot translate into effective pedagogical practice. The digital divide in Algeria is not one of competence, but of access.

The study reveals a "Digital Paradox": a student body and faculty that are psychologically ready and technically willing to adopt AI (60.3% daily use), but who are physically constrained. This contradicts Vo and Nguyen (2024), who observed student passivity due to lack of guidance. Algerian students are highly active, but they are operating in a vacuum. The pedagogical risk here is substantial. Because 68.4% of respondents report receiving "No" training from the university, they are likely utilizing AI for "surface-level" tasks (e.g., generating entire essays) rather than "deep-level" tasks (e.g., brainstorming, critical analysis, feedback loops). The qualitative request for "*Formal trainings by AI experts provided by the institutions*" rather than theoretical lectures highlights the stakeholders' desire to bridge this skills gap.

The strongest correlation in the study exists between the lack of policy (62.5%) and the fear of plagiarism (74.3%). This suggests that the "stigma" mentioned in the qualitative responses is a direct result of administrative silence. Unlike Mulalić et al. (2025), who found that students feared AI bias, Algerian stakeholders primarily fear *academic invalidity*. The lack of clear "Green Light / Red Light" policies means that students do not know if using AI for grammar checking constitutes cheating. As Binu (2024) and Braknia et al. (2025) warn, without "fraud prevention" mechanisms, AI tools pose a threat to academic integrity. The university's failure to regulate creates an environment of suspicion rather than innovation.

6. CONCLUSION

This research provides **empirical** insights into the disparity between the digital readiness of academic stakeholders and the stagnation of institutional infrastructure within higher education in Algeria. The findings catalogue a high willingness to adopt AI, exemplified by widespread daily usage, which is ultimately counteracted by severe logistical constraints and a regulatory vacuum.

The research highlights several critical insights into the integration of AI in higher education. Shadow adoption is widespread, with both students and teachers relying heavily on AI tools outside formal university channels due to insufficient institutional support, as reflected in the 61.1% who disagree that such support exists. The most pressing challenge is the infrastructural barrier, particularly the lack of reliable Wi-Fi and adequate devices, which is ranked as a greater impediment to AI adoption than cultural resistance. Human-AI hybridity emerges as another key finding: while AI is highly valued for writing assistance and personalization, with 78.9% acknowledging its usefulness, it is not yet perceived as a substitute for the essential “human touch” in complex communication. Finally, the regulatory vacuum exacerbates concerns, as 62.5% of respondents are unaware of clear policies, leading to heightened anxiety about plagiarism, with 74.3% agreeing this is a significant issue. Together, these findings underscore the urgent need for universities to address infrastructural shortcomings, provide institutional support, and establish clear regulatory frameworks to harness AI’s potential effectively.

While this study focused on English language education, the insights extend to the broader digitization strategy of the Algerian higher education sector. Simply mandating a "Zero Paper" policy is insufficient without the physical "infrastructuring" required to support it. As designers of curriculum continue navigating this space, maintaining a balance between technological efficiency and human critical thinking is essential.

Based on the statistical data and qualitative feedback, the following practices are recommended for the Ministry of Higher Education and university administrators:

1. **Prioritize Hardware over Software:** Before investing in expensive AI licenses or software, the Ministry (MESRS) must ensure campus-wide, reliable Wi-Fi access. As indicated by the survey ranking (Table 4), this is the prerequisite for all other progress.

2. Institutionalize Practical AI Literacy: Universities should implement the "*formal trainings by AI experts*" requested by participants. These must be practical workshops, not lectures, addressing the 49.3% of staff who have never been trained.
3. Develop Clear Ethical Frameworks: Departments must draft specific "AI Use Policies" that distinguish between AI-assisted editing (permitted) and AI text generation (prohibited/cited). This moves away from a blanket ban toward regulated use, addressing the 62.5% of users currently operating without guidance.
4. Adopt Hybrid Pedagogy: Following Abbasi et al. (2025), instructors should use AI for automated grammar feedback and personalized exercises, freeing up classroom time for complex human interaction and oral skills practice, areas where the study confirms AI currently lags.

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