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Exploring Algerian EFL Students' Familiarity, Use and Attitudes towards Generative Artificial Intelligence Tools in Education

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Abstract

It is agreed nowadays that Artificial intelligence (AI) has gained wider acclamation in various sectors, including education. The integration of AI in education has unveiled an array of AI-powered tools, revolutionizing teaching and learning and equipping both students and teachers to navigate the demands of the digital era. Within the framework of the Technology Acceptance Model, the present study aims to explore Algerian EFL students' familiarity, use and attitudes towards artificial intelligence tools and chatbots in the learning process. To this end, an exploratory study involving a mixed-methods design was conducted with 305 graduate and undergraduate EFL subjects in the Department of English of the University of Algiers 2. The results emerging from the quantitative and qualitative analysis of the questionnaire revealed that the subjects were familiar with different AI tools, such as Chatbots and generative tools, mainly using them to complete tasks requiring both lower and higher-order thinking skills. The subjects generated positive attitudes towards the use of AI, favouring their efficiency and support but expressing concerns about potential over-reliance and impacts on their motivation, critical thinking skills and creativity. The study concludes with suggestions for future research on the ethical implications and best practices for AI use in higher education.

Keywords: Artificial intelligence, attitudes, EFL students, familiarity, higher education

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Introduction

In this era of tremendous technological developments, it is agreed nowadays that Artificial Intelligence (henceforth, AI) has become increasingly prominent in different sectors, such as healthcare, engineering, and education, aiming at simulating human problem-solving abilities and increasing optimization. The implementation of AI in the educational field has brought to light the design of varied AI-powered tools that have recently revolutionized teaching and learning, enabling students and teachers to cope with this digital age. The use of AI chatbots and tools has been viewed as double-pronged since some universities around the world have acknowledged the pedagogic benefits of AI in providing engaging learning experiences for students, while others seem to undermine its adoption as an instructional tool for ethical reasons (Gilissen et al., 2022).

However, one cannot ignore the fact that the use of internet technologies in general and AI-powered tools in particular seems to be highly popular among students and young adults as they often use them to learn, to interact with information and to solve all types of everyday problems (Sallam, 2023), and Algeria is no exception. Given this fact, it was felt appropriate to explore Algerian EFL students' familiarity, use and attitudes towards the use of AI tools in the learning process in the Department of English of the University of Algiers 2. To fulfill the study's objectives, this study seeks to address the following research questions:

RQ 1: What AI tools are Algerian EFL students familiar with?
RQ 2: How do Algerian EFL students use AI tools in the learning process?
RQ 3: What are the students' attitudes towards the use of AI chatbots and tools?

The present study can provide important insights into EFL students' familiarity, use and attitudes towards generative AI chatbots and tools in the learning process. The findings of this study can inform practitioners about how this new generation of technology is embraced and perceived by students and how it may affect EFL students' learning outcomes and engagement in the learning process. Findings of this study can be exploited to shape policy decisions and educational practices regarding the integration of AI in the Algerian University.

1. Literature review

1.1. *Defining artificial intelligence*

Artificial intelligence is part of computer science and is defined as the science of creating smart machines (Mertala et al., 2022). The purpose of artificial intelligence is to create intelligent machines that can learn and process information, imitating human behavior. Among AI technologies, we mention chatbots whose history is traced back to the 1960s, where the very first chatbots, called Eliza and ALICE (Artificial Linguistic Internet Computer Entity), were created based on natural language processing to emulate human-like conversations and provide answers which are triggered by users' inquiries (Weizenbaum, 1966; Wallace, 1995). Thus, the term "robots" describes any device that functions independently to a certain degree, guided by computer control (Labadze et al., 2023). However, with the rapid technological developments that artificial intelligence has witnessed, a new generation of chatbots has been brought to light to process more advanced human-machine interaction, whose execution is achieved by using natural language analysis systems, leading to precision in giving ubiquitous answers and information. This is fully presented in the subsequent section.

1.2. The rise of generative AI chatbots in education

With the advancement of artificial intelligence, new sophisticated and rigorous chatbots have been launched to perform complex tasks. Among the eminent chatbots we mention ChatGPT, Google Bard or Gemini, Ada, and Socratic, which have gained wider acceptance in the educational field. ChatGPT was launched in 2022 by Open AI, with the aim to produce text and interactive content based on human-machine interaction that answers users' questions and inquiries. Although it has been the subject of considerable criticism for its lack of reliability and potential for academic misconduct, ChatGPT's interactive features can facilitate problem solving through follow-up questions that are stimulated by dialoguing, leading to a natural flow of responses (Mai et al., 2024). Google Bard is also an advanced AI-powered chatbot that was created in 2022 by Google AI for educational purposes. Quite similar to the features of ChatGPT, Google Bard is introduced to help students and educators generate updated text, create content, do language-related tasks, and engage in machine-human interaction to answer questions. As envisaged by Labadze et al. (2023), the key difference between Google Bard and ChatGPT is that "Google Bard is trained on a dataset that includes text from the internet, while ChatGPT is trained on a dataset that includes text from books and articles" (p.2). Thus, while both chatbots hold vastly more information, the rift between ChatGPT and Google Bard lies in the former's tendency to provide succinct responses to factual queries, whereas the latter excels in maintaining with the latest developments and updates. Ada is another generative Chabot that was launched in 2017 to provide personalized learning. As noted by Konecki et al. (2023) the major aim of the system is for Ada Chabot to give students feedback immediately; however, it may generate disproportionately false answers and get information wrongly interpreted due to its incapability of responding appropriately to difficult questions.

Artificial intelligence also encompasses learning platforms, such as Socratic, that facilitate the involvement of a community of learners, including teachers and students. An example of an AI learning platform is Socratic, which was introduced in 2013 and later powered by Google AI in 2018 (St-Hilaire et al., 2022). Its objective is to provide students with comprehensive explanations of new concepts, with the support of learning resources, visual materials and teacher feedback tailored to students' learning needs. Nevertheless, one could argue that over-reliance on such AI tools can limit students' critical thinking and creativity, and encourage them to be more passive recipients of knowledge rather than active producers of it. This passive outcome may challenge the real purpose of the twenty-first century pedagogy that calls for the use of higher order thinking skills in the learning process to synthesise, analyse, evaluate and construct knowledge. Yet, the use of AI-powered tools is contingent upon the implementation of specific pedagogical strategies that are designed to create a supporting learning environment for students. These strategies are presented and discussed in the forthcoming section.

1.3. *Pedagogical underpinning of generative AI tools*

On the periphery, AI-powered tools and chatbots seem to be designed to provide answers based on individuals' queries or prompts as mentioned in the previous section. However, central to these tools are different theories that were to intertwine to give rise to pedagogical strategies that facilitate the learning process.

According to Chan and Hu (2023), AI-powered tools can provide a personalized learning experience for students, enabling them to study at their own pace and customize learning to encompass students' preferred learning styles. With the feature of immediate feedback that AI tools offer, students can be engaged in the learning process and triggered to seek consolidation and recommendations when needed to improve their learning. This embedded scaffolding (Vygotsky, 1978) is reflected in the provisional instructional support that AI offers to students to

help them gradually reinforce specific skills. On this point, it may be noted that this digital scaffolding can be observed in providing modeling or guidance on solving complex tasks, watching tutorials, and matching resources, such as videos, articles and books, to students' learning needs.

Interactive learning is also emphasized in AI as the different chatbots are created to simulate human-like conversations, offering students seamless engagement with the content and leading to a better sense of inclusion (Mai et al., 2024). Central to interactive learning is collaborative learning, an aspect that occurs within students' zone of proximal development (Vygotsky, 1978) and that leads to advanced performance. AI tools when adopted properly by teachers can foster a community of learning that promotes three types of interaction, viz. student-student interaction, student-teacher interaction and student-material interaction (Sallam, 2023).

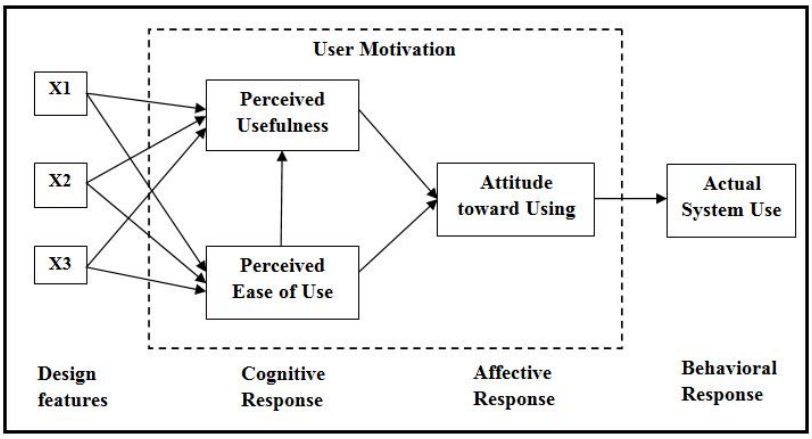
Although the different pedagogical strategies embedded in AI-powered tools are founded on different traditional theories, a modern learning theory has been advanced for this digital age to explain the underpinnings of these tools. Connectivism, advanced by Siemens (2005), is a learning theory that highlights the salience of technological networks in the teaching-learning process. According to Connectivism, knowledge construction in the context of the digital age needs to be founded on meaningful connections and interactions with diverse information sources or networks. As referred to Siemens (2005), in this digital driven era, knowledge is disseminated across a network of connections, which necessitates digital literacy for students to be able to construct knowledge from these networks. Thus, learning does not only mean gaining knowledge, but it also means being able to understand and use information networks adequately. This process also requires diversity of opinions to be able to analyze and evaluate the efficiency of information and higher-order mental functioning to differentiate between salient and disproportionate information, leading to knowledge construction shaped by academic integrity and independent learning (Gilissen et al., 2022). By adopting this pathway, teachers can mitigate students' over-reliance on AI-chatbots to copy and paste ready-made information, which results in decreased learner agency that may lead to a minimal use of critical thinking skills and autonomy.

As noted by Sallam (2023), teachers, who are seen as catalysts, are therefore encouraged to create a learning environment that embraces the use of AI in a systematic way, with the objective of raising students' awareness of how to use it effectively and ethically for collaborative learning, knowledge acquisition and knowledge construction. In order for a new technology to be accepted and normalized in a particular context, its users need first to demonstrate a certain level of acceptance and integration. This perspective is reflected in the technology acceptance model, which is fully presented in the subsequent section.

1.4. *Technology acceptance model: Students' use and attitudes towards AI tools*

Grounded on reasoned action theory suggesting that individuals' actions are influenced by their attitudes, the Technology Acceptance Model (TAM), which owes its genesis to Davis (1986), is a theoretical framework that explains how individuals accept and use technology. The TAM model is built on the premise that when students are presented with a new technology, their choice about how and when they will use it is influenced by two main factors. These two factors are: perceived usefulness (PU) and perceived ease of use (PEOU). The figure below illustrates Davis' (1986) technology acceptance model:

Figure 1: Technology Acceptance Model



Source: (Davis, 1986, p. 24)

Directly affecting the individual's attitude towards using technology, perceived usefulness and perceived ease of use are used to explain the influence of individuals' behavioral intention on using technology, ultimately determining their actual use. On the one hand, perceived usefulness represents the extent to which a student perceives the use of a certain technology as beneficial to their learning process, thereby adopting it to perform their tasks better or more efficiently. On the other hand, perceived ease of use is based on self-efficacy theory and emphasizes the degree to which the individual considers the use of a specific technology as easy and accessible. These two TAM factors influence individuals' attitudes towards using the technology, which in turn affects their behavioral intention to use it. According to this model, the intention to use then directly influences the actual usage behavior. This model, which will be used in the present study, can provide insights into the cognitive and affective factors mediating and influencing the effect of the features of AI on technology acceptance. It also helps explain why students accept or reject the integration of AI tools into higher education, and assesses their willingness to continue using such technologies in the future.

Reference to studies such as Ajlouni et al.'s (2023), Freeman's (2024) and Al-Tkhayneh et al.'s (2023), for instance, suggests that students generally generate positive attitudes towards the use of AI-powered tools for learning. This is due to the instructional support these tools provide, such as immediate feedback, information accessibility, and personalized learning. However, the researchers warned against a few drawbacks, concluding that AI-powered tools can lead to over-reliance and inaccurate information, and can affect students' self-efficacy, making them more anxious, addicted, and demotivated. As a recommendation, training can be provided to students to address student concerns and improve their ability to use AI successfully, thereby avoiding issues related to academic integrity.

Moreover, in 2023, Alzahrani conducted a study to explore students' attitudes and behavior towards artificial intelligence in university. The results of the study indicated that the participants' attitudes towards AI tools had an influential role on their behavior to use AI in university. What is more interesting in these findings is that perceived risks and effort expectancy were found to have a direct bearing on shaping students' attitudes, thereby influencing the way students accepted and used AI in the learning process. Reflecting perceived use and perceived usefulness, Stohr et al.'s (2024) study found that the use of AI was embraced and accepted by the participants across different demographics. This technology acceptance led the participants to acknowledge its potential in enhancing their learning; however, some negative attitudes were also generated, reflecting the participants' concerns about the negative impact that AI tools might have on their learning process, including biased information and academic dishonesty.

2. Methodology

An exploratory study involving a mixed-method design was conducted in the Department of English of the University of Algiers 2 in the academic year 2023-2024. The aim was to explore EFL students' familiarity, use, and attitudes towards AI-chatbots and tools in the learning process. The sample consisted of 305 subjects who were randomly selected from different educational levels: first year, second year, third year, master 1 and master 2.

To gather a sufficient and relevant amount of information, an online questionnaire, including 28 closed and open-ended questions, was administered to the subjects. The questionnaire consists of four sections. Section 1 seeks to elicit demographic information on the participants, focusing on their gender and educational level. Section 2 aims to depict students' familiarity with AI chatbots and tools. In addition to one close-ended question and one open-ended question, the second section provides 7 Likert-scale items with options to select and rate from "Unfamiliar" to "Familiar and regularly use it". Section 3 aims to find out EFL students' use of generative AI tools in the learning process; it consists of 8 Likert-scale items and 2 open-ended questions. Section 4 is meant to unveil students' attitudes towards the use of AI tools. It comprises 15 Likert-scale items and one open-ended question. The close-ended questions and the Likert-scale items were analyzed descriptively using frequency analysis, and the open-ended questions were analyzed qualitatively using thematic analysis. The next section presents the results of the present study.

3. Results

This section presents the analysis of the questionnaire results. The results are displayed in diagrams and tables for better visualization. The following section displays the findings related to the first section of the questionnaire.

3.1. Demographic Information

The results related to section one of the questionnaire are presented in the figures below:

Figure 2: Subjects' distribution according to gender

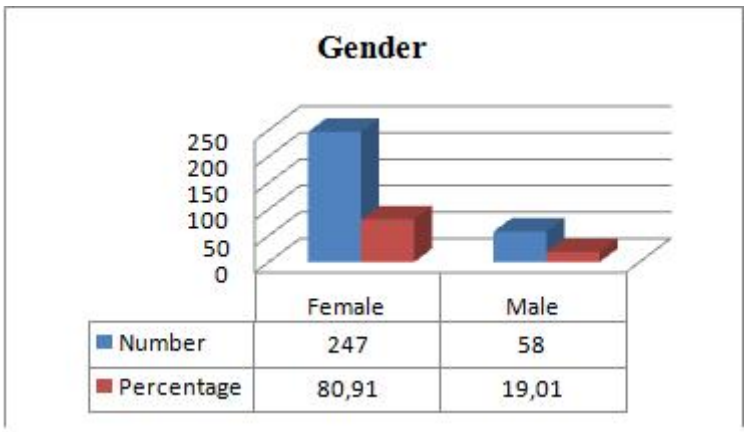


Figure 2 presents the results related to the subjects' distribution according to gender. The total number of the subjects is 305, among which there are 247 females and 58 males. This indicates that female students constitute approximately 80.91% of the sample, while males make up about 19.01%. The gender distribution highlights a significant predominance of females over males in this sample.

Figure 3: Subjects' educational levels

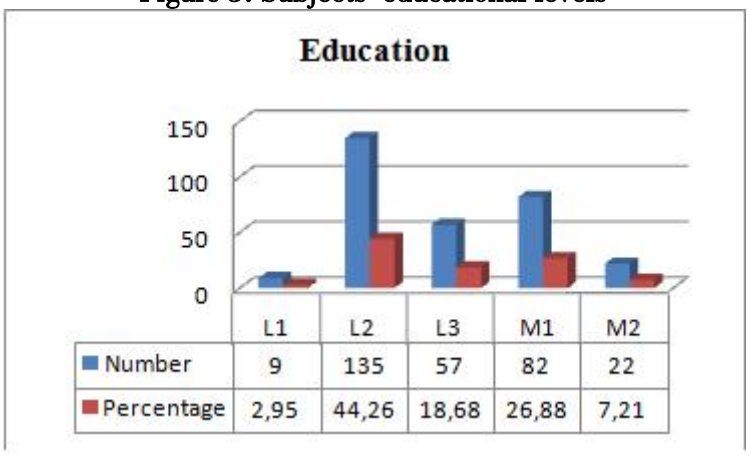


Figure 3 demonstrates the results related to the subjects' educational levels. As shown in the figure above, the results indicate that 9 students are in the first year, and 135 subjects are second year EFL students. The findings also reveal that 57 subjects are third year students while 82 subjects are Master 1 students. There are 22 subjects who are Master 2 students. They are all EFL students studying English in the Department of English of the University of Algiers 2. The results of the second questionnaire section are displayed in the subsequent section.

3.2. EFL Students' Familiarity with AI-Chatbots

The first research question aimed to explore EFL students'familiarity with AI chatbots. The results related to the first research question are displayed below:

a. Are you familiar with AI Chatbots and tools?

The subjects' answers to question 1 from section two of the questionnaire are displayed in the figure below:

Figure 4: EFL Students' familiarity with AI-chatbots

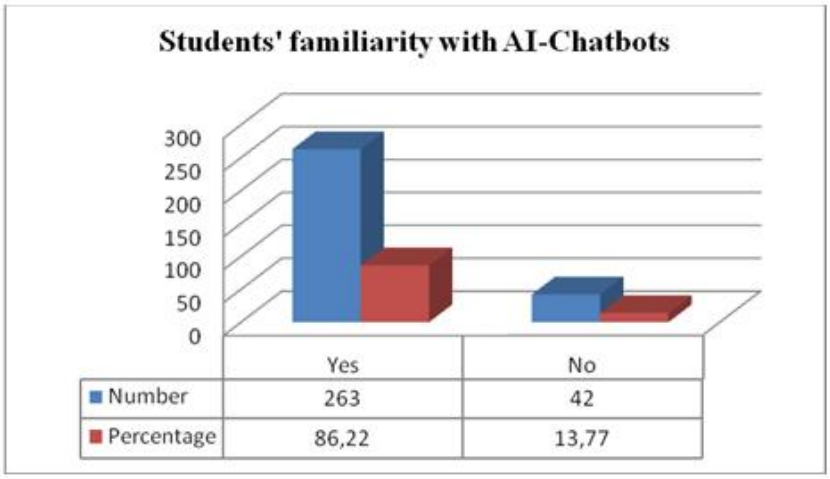


Figure 4 displays the results of students' familiarity with AI-chatbots and tool. The results in the diagram above show that a significant majority of students are familiar with chatbots. Out of the total sample, 263 students, accounting for 86.22%, reported being familiar with the use of AI tools. However, 42 students, representing 13.77%, indicated that they are not familiar with AI

chatbots. This distribution demonstrates a high level of familiarity with chatbots among the student population, suggesting widespread exposure and potential usage of chatbot technology in their daily lives or educational environments.

b. Are you familiar with the following AI chatbots and tools? Please indicate your level of familiarity.

The results of the aforementioned question are presented in the table below:

Table 1: EFL students' familiarity with well-known AI-chatbots

N	AI Chatbots and tools: Items	Unfamiliar		Familiar and never use it		Familiar but rarely use it		Familiar and regularly use it	
		N	%	N	%	N	%	N	%
1	ChatGPT	15	4.91%	45	14.75%	142	46.55 %	103	33.77%
2	Quillbot	237	77.70%	32	10.49%	26	8.52%	10	3.27%
3	Grammarly	105	34.42%	80	26.22%	75	24.59 %	45	14.75%
4	SlidesAI	248	81.31%	45	14.75%	10	3.27%	2	0.65%
5	Bard	270	88.52%	28	9.18%	5	1.63%	2	0.65%
6	Talkpal AI	255	83.60%	26	8.52%	20	6.55%	4	1.31%
7	Socratic	270	88.52%	20	6.55%	12	3.93%	3	0.89%

Table 1 illustrates the different levels of familiarity and usage among students for different AI chatbots and tools. Based on the results shown in the table above, ChatGPT stands out as the most familiar and regularly used tool, with 33.77% of students using it regularly and 46.55% using it rarely. However, Bard and Socratic are the least familiar, with 88.52% of students being unfamiliar with these tools. Grammarly also shows a relatively balanced distribution, with 26.22% of students familiar but never using it, and 24.59% using it rarely. Tools, such as Quillbot, SlidesAI, Talkpal AI, and Bard, have high unfamiliarity rates, indicating limited exposure or usage among students. These findings point to the different levels of popularity and use of AI tools among students. They suggest that while ChatGPT and Grammarly are preferred and used, others like Bard and Socratic are less known and less used.

c. What other tools are you familiar with?

The results of question 3 from section two of the questionnaire are illustrated in the table below:

Table 2: EFL students' familiarity with other AI-tools

Other AI tools EFL students are familiarized with			
Category		Count	Percentage %
1	Adobe AI	2	**0.65%**
3	Microsoft Copilot	16	**5.24%**
4	Snapchat AI	16	**5.24%**
5	Reverso	5	**1.63%**
6	Duolingo	7	**2.29%**
7	Youtube	12	**3.93%**
8	Perplexity	25	**8.19%**
9	Sparknotes	54	**17.70%**
10	Crash Course	19	**6.22%**
11	AI Chat	5	**1.63%**
12	Writesonic	41	**13.44%**
13	Chat PDF	23	**7.54%**
14	Aithor	37	**12.13%**

Table 2 shows the results of EFL students' familiarity with other AI tools. As mentioned in the table above, Sparknotes is the most familiar tool, recognised by 54 students (17.70%). Writesonic and Aithor also have significant familiarity with 41 (13.44%) and 37 (12.13%) students respectively. Perplexity is known by 25 students (8.19%), Chat PDF by 23 students (7.54%) and Crash Course by 19 students (6.22%). Other tools such as Microsoft Copilot are familiar to 16 students (5.24%); Youtube is used by 12 students (3.93%) and Duolingo by 7 students (2.29%). Reverso and AI Chat are each utilized by 5 students (1.63%). Adobe AI is preferred by 2 students (0.65%). This distribution reflects the different exposure and use of AI tools among the subjects, with a notable preference for educational and writing support tools.

3.3. EFL students' use of generative AI tools in learning

The second research question aimed to find out how EFL students use generative AI tools in the learning process. The results of question 1 from section three of the questionnaire regarding students' use of AI tools in the learning process are displayed in the table below:

a. Please decide how often you have used the following tools.

Table 3: EFL students' use of generative AI tools in learning

N	Items	Never		Rarely		Sometimes		Often	
1	I have used AI tools to complete my assignments and tasks.	**AF**	**%**	**AF**	**%**	**AF**	**%**	**AF**	**%**
		75	**24.59 %**	82	**26.88 %**	127	**41.63%**	21	**6.88%**
2	I have used AI tools to translate passages.	102	**33.44 %**	85	**27.86 %**	90	**29.50%**	28	**9.18%**
3	I have used AI tools to complete my writing projects.	125	**40.98 %**	77	**25.24 %**	72	**23.60%**	31	**10.16 %**
4	I have used AI tools to get	92	**30.16**	60	**19.67**	102	**33.44%**	51	**16.72**

	some help in understanding lessons.		%		%				%
5	I have used AI tools to synthesize information.	61	**20%**	76	**24.91 %**	85	**27.86%**	83	**27.21 %**
6	I have used AI tools for summarizing lessons.	55	**18.03 %**	62	**20.32 %**	172	**56.39%**	16	**5.24%**
7	I have used AI tools, such as Quillbot, and Grammarly, to enhance my writing.	128	**41.96 %**	55	**18.03 %**	82	**26.88%**	40	**13.11 %**
8	I have used AI tools to create presentations.	158	**51.80 %**	66	**21.63 %**	65	**21.31%**	16	**5.24%**

Table 3 displays the results of the subjects' use of generative AI tools in learning. The results reveal that a notable 41.63% of the subjects sometimes use AI-chatbots and tools for completing their assignments and tasks (item 1), indicating a significant reliance on these technologies for instructional support. However, 24.59% of the subjects never use these tools for this purpose. Besides, while 33.44% of students never use AI-chatbots for translation, 29.50% sometimes use them, showing moderate usage for translation tasks (item 2). As seen in the table above, 40.98% of students report that they never use AI-chatbots and tools for writing projects, but 33.76% of them use these tools at least occasionally (item 3). When it comes to item number 4, AI-chatbots are sometimes relied on by 33.44% of the subjects to help them understand the lessons adequately, with an additional 16.72% using them often. Furthermore, the usage of AI tools for synthesizing information is fairly balanced (item 5), with 27.86% of students using them sometimes and 27.21% using them often. More than half of the subjects (56.39%) sometimes use AI tools to summarize lessons, indicating that summarization is a common application of these technologies (item 6). AI-powered tools such as Quillbot and Grammarly are sometimes used by 26.88% of students and often used by 13.11% to improve their writing quality (item 7). However, 41.96% of the respondents report that they never use these tools to enhance their writing. As far as item 8 is concerned, more than half of the students (51.80%) never use AI tools for creating presentations, suggesting that other methods or tools are preferred for this task. Nonetheless, 21.31% of students sometimes use these tools for presentations.

b. What benefits do you experience from using AI-chatbots and tools?

This open-ended question was analyzed using thematic analysis to extract categories and sub-categories emerging from the subjects' responses to the question. The findings are summarized in the table below:

Table 4: Advantages of generative AI tools

Theme	Categories	Sub-categories
Advantages of generative AI tools	**Time saving**	✓ Minimizing working time ✓ Providing quick answers ✓ Saving time during exams by summarizing lessons.
	Scaffolding	✓ Helping in completing assignments. ✓ Summarizing short stories and handouts. ✓ Facilitating understanding of lessons. ✓ Brainstorming ideas for writing projects and assignments.
	Information accessibility	✓ Providing detailed, specific answers ✓ Offering information that is not easily found elsewhere
	Personalized learning	✓ Enhancing general language ability ✓ Facilitating difficult lessons ✓ Enhancing writing skills ✓ Improving vocabulary and language learning

Table 4 shows the results of the subjects' answers related to the advantages of AI generative tools. This thematic categorization highlights 4 categories reflecting the multifaceted perspectives of EFL students on the use of AI chatbots and tools in learning. The first category is entitled time saving and has three sub-categories, which revolve around minimizing working time, providing quick answers, and saving time during exams by summarizing lessons. Some of the subjects' verbal data reflecting the aforementioned results are listed below:

Student 24: *"It's fast and easy to use and gives direct and correct answers unlike Google, it gives numerous answers. I personally use AI because it simplifies the task for me."*
Student 120: *"It shortens time. When I have exams I ask AI to make me a summary and translate it in case to understand, especially that I decided to take my master's degree years after getting my bachelor's degree. Seven gap years almost about to lose linguistic content, so it helps me a lot"*

The second category is about scaffolding. Four sub-categories emerged from the second category, which are completing assignments, summarizing short stories and handouts, facilitating understanding of lessons, and brainstorming ideas for writing projects and assignments. The following students' comments illustrate the findings of the second category:

Student 91: *"it helped me to brainstorm ideas and understand the short stories that the literature teacher asks us to read. Sometimes I use AI to summarize them because to be honest I can't read the whole novel; I get bored easily. I also summarize my handouts and find more explanations."*

Student 215*: "It made my life easier. Before when I used to revise my lessons, I had to watch several videos on YouTube and look for pieces of information on Google. However, now I just send a message and receive a detailed answer with well-explained examples."*

The third category emerging from the analysis of the students' responses to the question is entitled information accessibility. Students hold the view that AI generative tools can provide

detailed, specific answers to their questions and offer information that is not easily found elsewhere.

Student 262: *"AI tools are accessible at all times, they provide feedback and can save time"*

Student 285: *" AI helps me a lot because sometimes when I revise, I stop because I don't understand a point so I ask ChatGPT a question about the lesson, and it gives me very detailed info."*

The fourth category is called personalized learning. The analysis of the students' responses gives rise to four sub-categories. The subjects believe that AI generative tools can enhance their general language ability, including their writing skills, vocabulary and language learning.

***Student 23**: "it helped me express my thoughts better and learn vocabulary. For example, make it formal. It also helped me express certain ideas in better wording because my writing is poor."*

Student 211: *"When I am in need of someone to proofread my work, I often use ChatGPT to check any grammar or punctuation mistakes, which is extremely helpful and it saves me a lot of time and anxiety. I learn a lot from it"*

c. What challenges do you face when using AI-chatbots and tools?

The results related to this open-ended question are demonstrated in the table below:

Table 5: Disadvantages of generative AI tools

Theme	Categories	Sub-categories
Disadvantages of AI generative tools	**Impact on learning development**	- Limited students' creativity. - Decrease in problem-solving skills. - Reduced opportunities for students to develop their own skills and knowledge. - Hindering the development of research and learning skills. - Limiting the ability to practise and improve language skills.
	Academic integrity	- Increased potential for cheating on exams and assignments. - Using AI to complete tasks without understanding the material.
	Inaccuracy of information	- Incorrect or misleading information. - Misunderstanding complex questions. - Accepting inaccurate information without verification. - Robotic answers
	Motivation and self-confidence	- Encouraging laziness and reducing the motivation to work hard. - Low self-confidence and satisfaction with personal achievements. - Feeling inferior to AI capabilities and doubting personal abilities.

Table 5 shows the results of the students' answers regarding the disadvantages of AI generative tools. As shown in the table above, the thematic analysis reveals 4 categories that

highlight the disadvantages of using AI chatbots and tools for EFL students. These categories reflect the negative effects associated with the reliance on AI in the subects ' academic and personal lives. The results of the first category entitled "Impact on learning development" reveal that the students claim that becoming dependent on AI can decrease their critical thinking skills and personal effort. They also report that AI can limit their creativity and reduce their problem solving skills. Besides, the results show that heavy reliance on AI can reduce opportunities for students to develop their study skills and can limit their ability to practise and improve their language skills autonomously. The extracts below reflect the results of the second category:

Student 64: "*Less effort means more AI dependency; I think if this happens in an exaggerated way, this will turn humanity into robots, artificial and controlled by others, so no more creativity and use of the mind*"

Student 6: *"From my perspective I see that the disadvantage of AI Chatbots is when we see most students don't use their own creativity and efforts. They always try to find an easy way to do their homework without finding their style of writing which is a rare jewel to be creative in your writing even if you don't have enough vocabulary, but you try your best and let your ingenuity radiate and it actually worth"*

The second category is entitled "Academic integrity". The analysis of the students' responses reveals that the subjects hold the view that AI generative tools can increase the potential for cheating on exams and assignments. These tools, according to the students' responses, can affect students' learning since they use AI to complete tasks without understanding the learning material.

Student 271*: "I believe that AI has only increased the rate of cheating at university, especially on exams and homework"*

Student 45: *"I think that the widespread use of artificial intelligence in all fields has drawbacks, for example, in my class, my classmates use it for cheating on exams or preparing ready-made homework, and this is what makes the student lazy in order to attend lessons with his own creativity and skills."*

The third category is "Inaccuracy of information". The subjects confess that the use of AI Chatbots can generate incorrect or misleading information, misunderstand complex questions and produce robotic answers. These can also make students accept inaccurate information without verification. Students comment:

Student 64: *"I mostly use ChatGPT for proofreading and I have encountered a lot of problems. For example when I have a question about grammar to check if I am using a word correctly, it often says it is correct initially. Then, when I ask again for example "is the use of 'for' correct in this context?" It contradicts itself and says no.... It says there is a mistake when there is none"*

Student 225: *"Sometimes, these tools give wrong information, which could mislead the student. It can also make students lazy because they usually use it to get things done without actually learning something."*

Student 67: *"The results may sometimes seem a bit unnatural and very robotic. It makes you lose the idea. Sometimes even teachers feel and know that our work is done by AI."*

The fourth category emerging from the analysis of the students' responses to the question is entitled "Motivation and self-confidence". The subjects believe that the use of AI chatbots and tools can encourage laziness and procrastination and decrease their motivation to work hard. The results show that over-reliance on AI can also lead to addiction, low self-confidence and dissatisfaction with personal achievements. The subjects think that excessive use of AI can make them feel inferior to its capabilities and doubt their personal abilities. The students' comments illustrating these findings are stated below:

Student 37: *"Personally, I used to rely on AI a lot, and after some time I realized that I started underestimating myself and always made sure to check at any given moment. I feel that I can't use my common sense anymore or hard work to look for information."*

Student 52: *"Honestly, AI affected my self-confidence on learning since I am no more satisfied of my performance. I always feel like AI is way better than my own resolutions. I become very addictive to it."*

The following are the results of the fourth section of the questionnaire.

3.4. EFL students' attitudes towards the use of generative AI tools in the learning process

The third research question sought to explore EFL students' attitudes towards the use of AI tools in the learning process. The results related to this research question are presented in the table below:

a. Please decide whether you agree or disagree with each statement by indicating whether you: Strongly Agree (SA) Agree (A) Neutral (N) Disagree (D) Strongly Disagree (SD).

Table 6: EFL Students' attitudes towards the use of AI tools in the learning process

N	Items	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
		AF	%	AF	%	AF	%	AF	%	AF	%
01	AI-tools I use have a positive impact on my learning outcomes.	35	11.47 %	118	38.68 %	90	29.50 %	37	12.13 %	25	8.19 %
02	AI-tools can generate better information than I can produce by myself.	23	7.54 %	100	32.78 %	90	29.50 %	60	19.67 %	32	10.49 %
03	Chatbots generate average results compared to my efforts.	13	4.26 %	132	43.27 %	85	27.86 %	55	18.03 %	20	6.55 %
04	My university has strict regulations on the appropriate use of generative AI tools by students.	45	14.75 %	3	0.98%	92	30.16 %	30	9.83 %	135	44.26 %

05	The use of chatbots can improve my language skills.	58	**19.01 %**	127	**41.63 %**	73	**23.93 %**	37	**12.13 %**	10	**3.27 %**
06	Using chatbots in education should be banned.	20	**6.55 %**	58	**19.01 %**	62	**20.32 %**	117	**38.36 %**	48	**15.73 %**
07	Using chatbots leads to academic dishonesty and plagiarism.	30	**9.83 %**	48	**15.73 %**	69	**22.62 %**	115	**37.70 %**	43	**14.09 %**
08	The use of chatbots is prevalent among my peers.	120	**39.34 %**	125	**40.98 %**	50	**16.39 %**	7	**2.29 %**	3	**0.98 %**
09	The chatbots I use make me a successful learner.	45	**14.75 %**	120	**39.34 %**	82	**26.88 %**	40	**13.11 %**	18	**5.90 %**
10	I am worried about how AI-chatbots might affect my learning in the long term.	97	**31.80 %**	115	**37.70 %**	57	**18.68 %**	24	**7.86 %**	12	**3.93 %**
11	I support the use of AI in the learning process.	62	**20.32 %**	142	**46.55 %**	60	**19.67 %**	30	**9.83 %**	11	**3.60 %**
12	AI cannot replace humane creativity and intelligence.	165	**54.09 %**	72	**23.60 %**	42	**13.77 %**	12	**3.93 %**	14	**4.59 %**
13	My teachers have a negative perception of AI tools (such as ChatGPT and Gemini)	97	**31.80 %**	140	**45.90 %**	62	**20.32 %**	4	**1.31 %**	2	**0.65%**
14	Using chatbots for assignments is cheating.	67	**21.96 %**	74	**24.26 %**	97	**31.80 %**	57	**18.68 %**	10	**3.27 %**
15	Using generative AI tools in the learning process is unethical.	35	**11.47 %**	38	**12.45 %**	75	**24.59 %**	115	**37.70 %**	42	**13.77 %**

Table 6 displays the results of Algerian EFL students' attitudes towards using AI-powered tools in the learning process. In response to items 1 and 2, the results reveal that 38.68% of the respondents agree that the AI-chatbots they use have a positive impact on their learning outcomes, and they (32.78 %) agree that chatbots can generate better information than they can produce by themselves, although (29.50%) of respondents remain neutral on this claim. A majority of the respondents (47.53%) agree that chatbots generate average results compared to their own efforts. Regarding guidelines of use, 44.26 % of the subjects strongly disagree that their university has strict regulations on the use of generative AI tools by students, and a considerable number of students (38.36%) disagree that using AI chatbots for learning should be banned, reflecting a

preference for the continued use of artificial intelligence in the learning process. Furthermore, a majority of students (41.63%) agree that chatbots can improve their learning outcomes; however, 37.70% of them disagree that using chatbots is related to academic dishonesty, indicating an acceptance of AI tools as complementary to traditional learning tools. With regard to item number 8, approximately half of those surveyed agree (40.98 %) that the use of chatbots is prevalent among their peers, and they (39.34 %) think that chatbots make them more successful learners. In response to item number 10, 37.70% of those who were questioned agree that they are worried about how AI might affect their learning in the long term. As shown in the table above, 46.55 % of the students agree that they support the use of AI in the learning process, but more than half of students (54.09%) strongly agree that AI cannot replace human creativity and intelligence, affirming the unique value of human capabilities. With regard to academic integrity, 45.90% of students agree that their teachers may have a negative perception of AI tools, and 24.26% of students agree that using chatbots to do assigned tasks is cheating. However, 37.70% of students disagree that using AI tools in learning is unethical. The results of the second question from section four of the questionnaire are presented below.

b. In your opinion, how do you think AI can be systematically integrated into the university?

The results of this open-ended question regarding AI integration into higher education are displayed in the table below:

Table 7: Students' attitudes towards the integration of AI into higher education

Theme	Categories	Sub-categories
Students' perspectives on the integration of AI in the Algerian University	**Balancing AI use and student effort**	- Using AI to enhance leaning and develop language skills.
	Ethical use	- Responsible use of AI - Clear guidelines on AI use
	The role of teachers	- Guidance and monitoring - Promoting strategies for use
	Training	- Integrating AI usage in study skills module. - Training students on how to use AI moderately

Table 7 presents the results of students' attitudes towards the integration of AI into higher education. As shown in the table above, four categories emerged. The first category is entitled "Balancing AI use and student effort". The students suggest that AI can be integrated in the university in order to enhance student learning and develop their language skills, leading to extra opportunities for immediate feedback and scaffolding. The extracts below illustrate these findings:

Student 12: "*The integration of chatbots in education or in university can offer benefits such as immediate assistance, quick access to information, enhanced learning outcomes, and improved educational experiences. But we need to know how to use it.*"

Student 89: "*I think AI is just the next step humanity has to take. Just how we moved from physical books to digital books and the internet, we are now moving to an even better and efficient tool. I think it will be nice if it will be introduced in the university and systemized*"

The second category is "Ethical use". The students stress the significance of using AI tools responsibly in order to avoid ethical issues, such as cheating and plagiarism. The students agree that AI needs to be adopted to support and facilitate learning rather than complete tasks and assignments for students. The following responses illustrate these results:

Student 211: "*Using AI and tools in learning processes is beneficial and helpful but with limitations and responsibility. AI tools are not created for cheating, plagiarism, or unethical behaviors.*"

Student 290: "*I strongly believe that the use of AI chatbots is very useful with limits. If the students use it just to help themselves and get more information, it wouldn't be considered as cheating.*"

The third category is entitled "Teacher's role". The subjects highlight the importance of teachers in guiding the responsible use of AI in the learning process. They also pinpoint to the idea that clear guidelines and strategies on how to use AI for learning need to be communicated in order to allow students to benefit from AI without becoming dependent. These extracts highlight the aforementioned results:

Student 73: "*I am a student and a teacher at the same time. From my perspective as a teacher, I'll allow my students to use AI tools but only to have a better look and idea about the answers and results. They must transfer and generate the answers according to their intelligence, background information, and understanding.*"

Student 23: "*Even though my strong disagreement prevails over my answers, I do not deny AI's helping features. However, there should be strict guidelines to limit its use.*"

The fourth category is named "Training". The subjects report that not all students know how to use AI properly, suggesting that the use of AI needs to be taught in the study skills module to cope with this digital age. The following comments reflect this result:

Student 303: "*sometimes we do not know how to use it well maybe if teachers can show us or train us on how to use it successfully we'll not fall in the trap of plagiarism and cheating.*"

Student 162: "*In fact, we know it is tempting and students are absorbing information without questioning, analyzing or making any critical thinking. Information is everywhere. Students are no longer running to get knowledge...The best solution is to have some training to use it to support learning. So, chatbots can really yield positive results if properly implemented. Please urge our department to change its thinking about AI.*"

The results are discussed in the subsequent section.

4. Discussion of the findings

The present study aims to explore Algerian EFL students' familiarity, use and attitudes towards generative AI tools in the learning process. The study addresses three research questions. The first research question sought to identify the AI tools that Algerian EFL students are familiar with. The findings of the present study indicated that the subjects were familiar with a number of AI-powered tools and chatbots among which is ChatGPT. According to Mai et al. (2024), ChatGPT is the widely used AI tool by students due to its interactive features that can facilitate problem solving through follow-up questions. In addition to ChatGPT, other tools, such as

Grammarly, Sparknotes, Writesonic, and Aithor received considerable attention from the subjects compared to AI-powered learning platforms like Socratic, which received less familiarity. The subjects' familiarity with Sparknotes may point to their preference for tools that can help them in simplifying difficult lessons, through summarizing and extracting the main ideas while Writesonic and Aithor can help them in leveling up their writing skills. On the other hand, the lack of familiarity with the other AI tools, such as Talkpal AI, SlidesAI and Bard, may suggest that these AI-powered tools have either not been introduced to the students or they do not address the specific learning needs that the students consider important. Therefore, these findings may imply that students tend to prioritize tools that can provide scaffolding to enhance their writing and understanding of difficult lessons, reflecting the learning needs that need to be addressed and the language skills that need to be consolidated (Alzahrani, 2023).

The second research question sought to explore how students use generative AI tools and chatbots for learning. The findings revealed that the subjects used AI tools to accomplish different tasks that required both lower and higher order thinking skills. In this regard, the subjects seemed to use AI-tools to complete assignments and tasks that required writing, indicating that their writing skills may be unsatisfactory, preventing them from constructing knowledge on their own. Regarding the lower order thinking skills, the subjects often opted for AI-powered tools to understand course material, synthesize information from a given lesson, and summarize the main points for better retention. This may suggest that students tended to have deficiencies in their ability to understand, synthesize and construct knowledge, and they appeared to rely on these tools to compensate for this deficiency. Within the theory of connectivism using AI in the digital age requires much effort than in traditional learning because knowledge is disseminated across a network of connections, which requires digital literacy for students to be able to construct knowledge from these networks (Siemens, 2005).

In addition, the subjects pinpointed to some merits and challenges of AI based on their own experience. They appreciated the use of AI tools and chatbots for their efficiency, scaffolding and information accessibility. Nevertheless, they indicated concerns about its potential negative impact on their affective state, including motivation and self-efficacy and on their learning development, focusing on critical thinking skills and creativity. As was demonstrated in the analysis of the questionnaire, the results highlighted the potential of AI to make students addicted and over-reliant, leading to reduced learner agency and autonomy. These findings can be explained by the fact that while AI tools can play a pivotal role in student learning in this digital age, it is crucial to use them with caution, ensuring that AI can maximize rather than affect students' learning experience (St-Hilaire et al., 2022; Konecki et al., 2023; Freeman, 2024).

The third question aimed to uncover EFL students' attitudes towards the use of AI tools in education after using them in their learning process. The current study revealed that the subjects generated positive attitudes towards the use of AI, claiming that it contributed to improving their learning outcomes through providing access to information, personalized learning and instructional support. However, despite the assistance and usefulness that AI provided to the subjects, EFL students seemed to favor their own abilities over that of AI, which is perceived by the subjects as a meditational tool only. When it comes to academic integrity, the subjects were well aware of the fact that strict guidelines need to be implemented to regulate the use of AI in education and use it responsibly by students, thereby mitigating plagiarism and cheating and avoiding AI prohibition in academic settings. They also highlighted some concerns about teachers' resistance to accept such technologies and the negative consequences that may arise from over-reliance on AI to complete tasks and assignments, which may result in reduced critical

thinking skills and creativity that are needed in higher education and in the twenty first century pedagogy.

With regard to AI integration into the Algerian university, the findings emerged from the analysis of the subjects' responses to the open-ended questions provided insightful perspectives regarding balancing the use of AI and student effort. In this respect, the subjects suggested that AI-powered tools could be integrated into the learning process as assistive tools that can provide extra scaffolding and practice to the struggling students who have weak language proficiency. Yet, the subjects also cautioned against its misuse and stressed the importance of using these tools ethically, following teachers' guidelines and strategies to achieve a supportive learning environment that embraces technology for learning development. Therefore, as noted by Bu (2022) and Siemens (2005), the role of the teacher is inevitable in this future AI integration, as they are considered as guides and facilitators of learning. Another important finding is that the subjects called for the need for training on how to use AI-tools and chatbots effectively for academic purposes through integrating them in the study skills module to improve their critical thinking skills, focusing more on synthesis and analysis. One could argue that AI can be a double-edged sword; however, as noted by Sallam (2023), when it is properly and ethically implemented, AI can foster good learning outcomes, supporting students in their learning process while encouraging a responsible and ethical learning environment.

According to the TAM tenets (Davis, 1986) and taking into account the findings of the current study, the results can be explained by the fact that the subjects' perceived usefulness is apparent in the underpinning pedagogical strategies provided by AI tools to improve learning outcomes, provide immediate feedback, and simplify difficult lessons. The perceived ease of use is reflected in the subjects' preference for tools that are accessible and easy to use. These perceptions shape their overall positive attitudes towards AI, despite concerns about ethical use and potential negative impacts on learning development. Moreover, the subjects' suggestions for integrating AI into the Algerian University further align with TAM since they showed a willingness to integrate these tools into the learning process, provided that ethical guidelines are followed, and adequate training is provided. The present findings are consistent with the results obtained by Alzahrani (2023), Freeman (2024), Al-Tkhayneh et al. (2023), Stohr et al. (2024), and Ajlouni et al. (2023) which found that students' positive attitudes towards AI significantly influenced the students' usage behavior, and perceived usefulness led to widespread acceptance of AI tools despite concerns about biased information and academic dishonesty.

Conclusion

The present study was conducted to explore Algerian EFL students' familiarity, use and attitudes towards generative AI tools in the learning process. Based on a mixed-methods design, this exploratory study consisted of 305 subjects from the Department of English of the University of Algiers 2. A questionnaire comprising close and open-ended questions was administered to the subjects to elicit quantitative and qualitative data. The findings of the current study revealed that EFL students were familiar with AI tools, such as ChatGPT being the most commonly used by the subjects. The subjects primarily used generative AI tools and chatbots to complete tasks requiring both lower and higher-order thinking skills, appreciating their efficiency and support but expressing concerns about potential over-reliance and impacts on motivation and creativity, emphasizing the need for responsible use and teacher guidance. Therefore, the present study stresses the potential of AI to leverage students' learning outcomes while also warning against its misuse, advocating for a balanced and responsible approach to AI integration in education.

Future studies examining the role of AI in personalized learning and its impact on different learning styles could also provide deeper insights. Finally, investigations into the ethical implications and best practices for AI use in higher education would help in developing comprehensive guidelines for its implementation.

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