



Exploring EFL Learners' Perceptions of AI-Generated Language Feedback in Out-of-Class Learning in Higher Education

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Abstract

This study aims to explore how English as a Foreign Language (EFL) learners in higher education use and perceive AI-generated language feedback in their out-of-class learning activities. Precisely, the study tackles three core questions: (1) Do EFL learners at the university leverage AI tools and applications for language feedback in out-of-class learning? (2) How do they perceive the effectiveness of AI-generated language feedback in improving their language skills? (3) What AI tools and applications do they use? A Google Forms questionnaire is administered to 36 EFL students at the university level. Data is analysed using descriptive statistics in SPSS.

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1. Introduction

The evolution in technology has spurred an outstanding rise in AI technology in various fields, including education. The confluence of AI technology and education has taken learning to another level. It opened new vistas for language learners around the globe to expedite their language proficiency. AI advancements come with an array of language applications and tools, which permit language learners to select the best that serve their interests and needs. Customarily, both inside and outside the confines of the classroom, language learners require language feedback, which is an indispensable component in language learning. Outside the classroom, AI comes into play to provide learners with language feedback, helping them improve their language skills in different areas, including grammar, writing, vocabulary, and conversational skills.

This study puts as a focal point the use of AI tools and applications by students majoring in English at the university level. It seeks to cast light on their perceptions of AI-generated language feedback in their out-of-class language learning activities. Additionally, the research strives to uncover various AI tools and applications, bringing to the surface the most common ones from the student's perspective.

This research is significant as it aims to explore how EFL students at university leverage AI tools and applications for language feedback outside formal

educational settings. By examining learners' perceptions, the study underscores which AI tools are mostly used by students. Further, it provides insights into how AI-generated feedback supports language development in informal settings. The findings can help educators recommend AI tools for enhancing language skills in projects, tasks, and other activities outside the classroom environment.

2. Literature Review

2.1 The Role of AI for Feedback and Language Learning

Recently, AI technology has undergone distinct development, attracting significant research interest. There has been a growing emphasis on how AI systems can facilitate learning tasks in education. To be sure, feedback plays a pivotal role in learning; it informs about the learners' progress, their performance in a task or their comprehension of a given concept (Hattie & Timperley, 2007). Given the critical role of feedback in learning and with the impeccable technological advances, researchers are particularly focused on how AI tools and applications can support effective feedback, especially in the context of language learning. The potential of AI to simplify feedback provision for language learners seems promising, as it provides an array of tools and applications specifically tailored to consolidate language learning and open the door for feedback reception, typically outside the

classroom. Out-of-class language learning with technology, as Lai et al. (2018) indicated, allows learners to interact freely with digital tools and platforms outside formal classroom settings, which permits varied self-directed learning experiences. By leveraging AI, learners have the opportunity to become more independent and partake in learning beyond the classroom (Srinivasan, 2022).

AI is instrumental in language learning. AI tools supply personalised and real-time feedback, enriching grammar, vocabulary, and pronunciation, and offering a more flexible learning experience (Jingshan, 2023). According to Zhang (2022), AI-driven feedback surpasses traditional methods in terms of speed, accessibility, and precision. AI tools are a good source for instant corrective feedback needed for continuous language practice and are efficient for language skills growth.

2.2 Types of AI Feedback Tools in Language Learning

Plenteous AI tools and systems are credited for providing fruitful feedback in language learning. Yesilyurt (2023) highlighted that AI tools act as feedback mechanisms that bestow learners with prompt and customised assistance when needed. Examples of AI tools are summed up in the following account.

2.2.1 Automated Writing Evaluation (AWE) Systems

Automated Writing Evaluation (AWE) systems attend to learners' mistakes, typically regarding their writing productions. One of their distinguishable traits is that they adhere to *natural language processing (NLP)* for error detection and correction. NLP, as Son et al. (2023) explained, assists machines in comprehending human language, making AI a fundamental pillar in language learning. AWE tools examples encompass *Grammarly*, *Pigai* and *WriteToLearn*. The algorithms in these tools study texts and, in return, provide feedback on grammar, syntax, and structure (Escalante et al., 2023; Yesilyurt, 2023).

2.2.2 Automated Writing Evaluation (AWE) Systems

Another instance of AI feedback tools is *intelligent tutoring systems (ITSs)*. ITSs are computer-based systems that yield customised and interactive learning experiences to learners without any human interference (Son et al., 2023). Yesilyurt (2023) emphasised their prominence in providing instant and customised language feedback. To illustrate, *Assessment and Learning in Knowledge Spaces (ALEKS)* is an online assessment and learning platform that estimates learners' language level, modifying content to suit any of their predicted strengths and flaws. In addition to the aforementioned AI tools, conversational agents and chatbots immerse learners in simulated interactive

conversations to bolster language growth, to be discussed next.

2.2.3 Conversational Agents and Chatbots

Another AI feedback mechanism proposed in Yesilyurt (2023) is conversational agents and chatbots. These tools are AI-driven, imitating human conversation and providing interactive feedback. For example, *ELIZA* provides a golden opportunity for language learners to practise their oral skills via simulated oral dialogues. The writing skill takes good advantage of the *Generative Pretrained Transformer (GPT) Large Language Models (LLMs)*, such as *GPT-4 by Open AI*. They are helpful tools for providing assistance and feedback on writing tasks (Escalante, 2023).

2.2.4 Adaptive Learning Applications and Platforms

The last example is *adaptive language learning applications and platforms* (Yesilyurt, 2023). These platforms leverage AI to adjust the content and difficulty of lessons based on learners' performance. Noteworthy platforms and applications comprise *Duolingo*, *Babbel*, and *Knewton*, which use techniques like spaced repetition and real-time feedback to create personalised learning experiences (Settles & Meeder, 2016; Yesilyurt, 2023). All the aforementioned AI feedback tools are substantial tools that aid feedback provision for language learners in their out-of-class learning activities.

2.3 Challenges and Obstacles of AI Feedback

AI-generated feedback comes with its own set of challenges and obstacles. First and foremost, it is often accompanied by credibility, bias, and ethical concerns. This makes human feedback preferable to many language learners. For example, students in the study of Nazaretsky et al. (2024) rated human feedback more favourably than AI feedback, particularly when it comes to genuineness and credibility. In a similar vein, Ryan et al. (2019) found that students' perceptions of feedback depended largely on its perceived objectivity, usefulness, and authenticity. Likewise, Yan et al. (2024) suggested that to use AI tools responsibly and effectively, learners should make sense of the various AI ethical challenges, limitations, and biases. Due to AI limitations, educational institutions and educators are presumably cautious and resistant to students' unrestricted use of AI tools (Jiang, 2022).

2.4 Solutions for Rectifying AI Feedback Challenges

To ensure maximum benefit out of AI tools for language feedback, it is highly advisable that the hurdles of its usage are catered for and rectified. One way to do that is through what Nazari et al. (2021) suggested, escorting AI feedback with human feedback for more effective results. That is to say, an amalgam of AI instant feedback and more contextual human feedback and explanations seems to form a

promising combination. Additionally, Nazaretsky et al. (2024) proposed that feedback systems should make transparency and ethical AI use a primary aim to improve AI adoption in education. Ensuring that these aspects are met in education, educators and students are more likely to gain more confidence and to be more comfortable leveraging AI tools. Of course, this is to ascertain that AI tools implementation for language feedback is compatible with moral standards. This way, biases, credibility, accountability, and privacy concerns are addressed, encouraging a larger and positive adoption of AI in education.

2.5 Previous Research and Theoretical Framework

Reflecting upon previous research in the literature, there has been copious research addressing learners' perceptions about the use of AI in higher education, but with more emphasis on language learning in general. Take the study of Al-Badi and Khan (2022), which sought to identify learners' and teachers' perceptions regarding AI use in personalised learning, following inferential statistics. Its main findings unravelled generally positive perceptions on the part of the participants. Another example is the study of Hezam et al. (2024). The results showed that AI has the potential to accelerate learning and promote autonomy, especially in resource-limited areas. On the other hand, the study of Zhang (2022) did focus on AI-generated

language feedback, though it emphasised the grammar component over other language aspects, and it prioritised the classroom context. This research, contrariwise, takes a broader perspective by stressing AI-driven language feedback in general, such as grammar, vocabulary, pronunciation, and writing structure, in out-of-classroom contexts. Thus, it addresses both a wider range of feedback types and more informal learning environments.

In the Algerian context, there is limited investigation of learners' perceptions of AI in language learning, let alone regarding AI-generated language feedback. This appears an intriguing topic to investigate by understanding AI use for language feedback among Algerian EFL students at university, for the most part, in informal out-of-class contexts. Most existing research predominantly centres on formal educational contexts, overlooking how learners engage with AI tools autonomously outside the classroom. This study seeks to explore how university-level EFL students in Algeria view AI-generated language feedback and identify the AI tools they commonly use during independent language learning. It seeks to contribute to a broader understanding of AI's role in facilitating feedback provision in the absence of instructors and peers, enhancing language learning beyond traditional classroom settings.

This study draws on two chief theoretical frameworks for a better interpretation of the results on how Algerian EFL learners harness AI-generated language feedback tools in their out-of-class learning. Expressly, it is inspired by the Technology Acceptance Model (TAM) advanced by Davis (1989) and the constructivist learning theory advocated by Piaget (1976) and Vygotsky (1978). While the chief concern of this study is to explore learners' perceptions regarding AI-driven language feedback via descriptive statistical analysis, these theories serve as a substantial lens to contextualise the findings. TAM is the theory that accounts for users' use and acceptance of novel digital and technological inventions (Davis, 1989). On the other hand, constructivist learning theory encourages self-directed and active learning (Piaget, 1976; Vygotsky, 1978), which aligns with the idea that learners engage with AI tools independently in their out-of-class learning endeavours for language feedback to promote their language skills. Integrating these theoretical underpinnings positions the study findings within broader technological and educational perspectives, thereby providing insights into the role of AI in language learning.

3. Methodology

3.1 Context

The study took place within the Algerian higher education context, targeting students majoring in English across various

universities. Given the increasing integration of AI technologies into language learning, the research aimed to explore the use and perceptions of AI-generated language feedback in out-of-class activities. Specifically, the study aimed to answer three research questions:

- (1) Do EFL learners at the university level use AI tools and applications for language feedback in out-of-class learning?
- (2) How do these learners perceive the effectiveness of AI-generated language feedback in improving their language skills?
- (3) What AI tools and applications are frequently used by these learners for language feedback?

3.2 Participants

The study targeted Algerian students from various universities within the English department. A convenience sampling method was employed, allowing any student from the English department, regardless of academic level, to participate in the research. A total of 36 students participated in the survey, representing a range of educational levels from first-year undergraduate to first-year master's students. Participants were recruited through social media platforms, contributing to a diverse sample of students from different universities across Algeria, yet resulting in a predominantly female demographic.

3.3 Procedure

3.3.1 Instrument

A questionnaire was chosen as the primary research instrument for this study, intending to gather comprehensive data on learners' experiences and perceptions. To facilitate easy distribution and broad access, the questionnaire was administered through Google Forms, allowing participants to respond via a direct, accessible online link.

The questionnaire comprised three key sections. The first section was devoted to collecting the respondent's general information, including age, gender, and academic level. The second section was dedicated to questions regarding using AI tools and applications for language learning in general and for receiving language feedback, specifically. The last section collected data on students' perceptions of AI-generated language feedback, including its effectiveness and accuracy and learners' level of satisfaction.

The nature of questions in the questionnaire ranged between binary (yes/no), multiple choice, and Likert scale questions. This amalgam of question types allowed for gaining quantitative data and offered a glance into students' perceptions.

3.3.2 Analysis

Data obtained from the questionnaire were principally quantitative. This made the Statistical Package for the Social Sciences (SPSS) an appealing choice for statistical analysis. The data underwent descriptive statistical analysis, basically calculating the frequencies and percentages for yes/no and multiple-choice answers while counting the mean and standard deviation when it appeared appropriate, especially for the case of Likert scale items, to capture variations in respondents' views. For clarity, data patterns were further supported by visual representations like tables and charts.

4. Results and Discussion

4.1 Results

4.1.1 Participants' Information

The results of this research were engendered by employing a Google Forms questionnaire distributed to EFL university students from different Algerian universities through multiple social platforms. A total of 36 students responded. The average age of participants was 21 years old ($M = 21,33$), and most were female (91.7%).

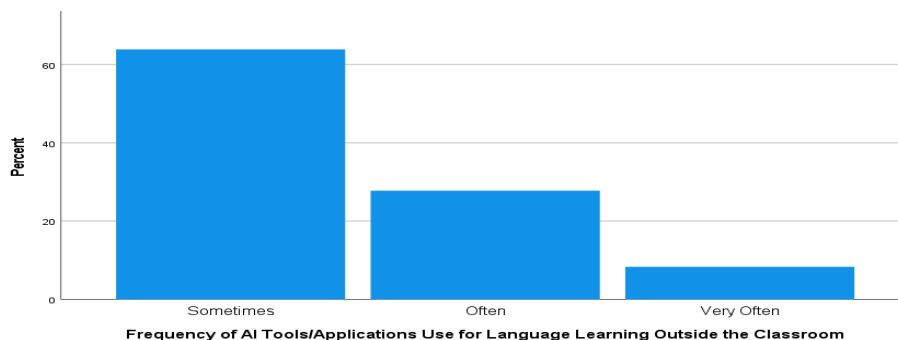
Participants represented various academic levels: first-year students (8.3%), second-year students (52.7%), third-year students (8.3%), Master's first year (25%), and Master's second year (5.5%).

4.1.2 Use of AI Tools and Applications for Language Feedback

4.1.2.1 Frequency of AI Tools and Applications Use Outside the Classroom

Figure 1 portrays the frequency of use of AI tools and applications outside the classroom among EFL university students.

Fig.1. Frequency of AI Tools Use Outside the Classroom



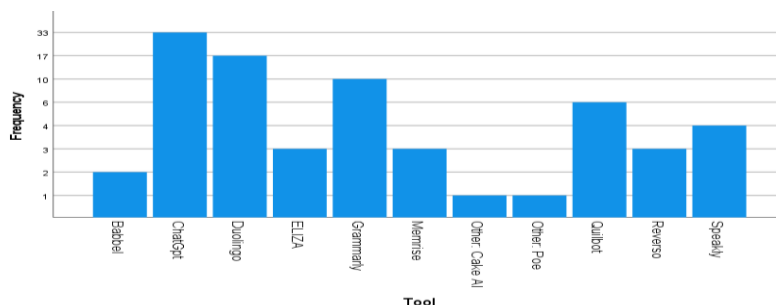
As Figure 1 indicates, most participants

(63.9%) engage with AI tools and applications 'sometimes' followed by 27.8% who use them 'often'. A very small number of respondents (8.3%) reported using AI tools 'very often', whereas no participant opted for the other two options 'never' and 'rarely'. This demonstrates that, at least occasionally, most students leverage AI tools outside the classroom.

4.1.2.2 Use and Types of AI Tools and Applications for Language Feedback Outside the Classroom

Most respondents (88.9%) reported using AI-driven tools and applications for receiving language feedback outside the confines of the classroom. The most commonly used tools and applications used are shown in Figure 2.

Fig.2. AI Tools and Applications Commonly Used for Language Feedback



The bar chart describes the frequency of AI tools and applications used by students of English outside the classroom. *ChatGPT* emerges as the top-

used AI tool with 33 counts, indicating its popularity and preference among respondents for language feedback. *Duolingo* application follows with 17

users, indicating that it serves as another popular AI-driven feedback tool, likely due to its gamified nature.

Grammarly comes next, with ten respondents selecting it for language feedback. *Quillbot* (6 users), *Speakly* (4 users), *ELIZA* (3 users), and *Reverso* (3 users) show moderate levels of usage, while *Babbel* (2 users) has minimal use. Two respondents mentioned additional AI tools in the 'Other' category: *Poe* and *Cake AI*.

4.1.3 Perceptions of AI Generated Language Feedback

4.1.3.1. Perceptions of AI-Generated Language Feedback for Improving English Skills

Students' perceptions regarding AI-driven language feedback efficiency for improving language skills are summed up in Table 1.

Table 1. Students' Perceptions of AI-Generated Language Feedback in Improving Language Skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.8	2.8	2.8
	Disagree	1	2.8	2.8	5.6
	Neutral	12	33.3	33.3	38.9
	Agree	20	55.6	55.6	94.4
	Strongly Agree	2	5.6	5.6	100.0
	Total	36	100.0	100.0	

As illustrated in Table 1, most participants (55.6%) agreed that AI-generated language feedback bolsters their language skills, pointing to a positive perception of its effectiveness. Additionally, 33.3% of respondents remained neutral, suggesting some uncertainty regarding its overall impact.

Only a small portion expressed scepticism, with 2.8% strongly disagreeing and another 2.8% disagreeing with the statement.

Meanwhile, 5.6% strongly agreed, further substantiating the idea that AI tools are viewed as beneficial for language improvement. Overall, the results suggest favourable perceptions toward the value of AI-generated feedback among students, while some individuals may need more convincing.

4.1.3.2 Perceived Accuracy of AI-Generated Language Feedback

Perceived accuracy is essential for assessing the effectiveness of AI-generated language feedback. The table below presents data on student responses regarding the accuracy of AI-generated feedback, namely

representing the mean and standard deviation.

Table 2. Perceived Accuracy of AI-Generated Language Feedback

N	Valid Missing	36 0
Mean		3.47
Std. Deviation		.560

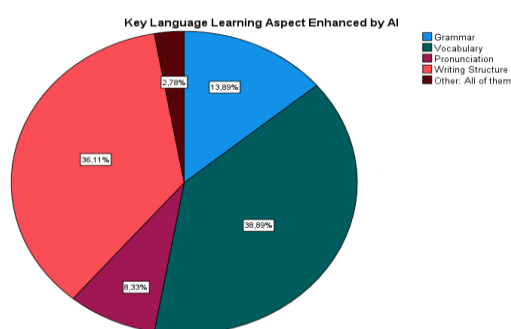
The findings reveal that respondents generally perceive the accuracy of AI-generated language feedback as moderate, with an average rating orienting slightly towards "Accurate" ($M = 3.47$, $SD = 0.560$). Over half of the participants (55.6%) viewed AI-driven feedback as neutral, while 41.7% considered it accurate, which brings us to the conclusion that most respondents find AI feedback to be neither highly reliable nor particularly inaccurate. Only a small percentage (2.8%) rated it as very accurate, pointing to a limited strong endorsement of AI's accuracy.

'Very inaccurate' and 'Inaccurate' categories went unnoticed by respondents. Overall, these findings reflect a cautious but slightly positive perception of AI feedback accuracy among respondents.

4.1.3.3 Key Language Learning Aspect Enhanced by AI Tools

The following figure illustrates the key language skills that students perceive to be enhanced by the use of AI tools.

Fig.3. Key Language Learning Skills Enhanced by AI Tools





Based on the data shown in the pie chart for the key language aspects enhanced by AI, the results show that Vocabulary (38.9%) and Writing Structure (36.1%) are the most commonly perceived areas of support provided by AI tools. A smaller proportion of respondents believed that AI significantly aids Grammar (13.9%) and Pronunciation (8.3%). Only one respondent (2.8%) selected 'Other', referring to all the skills mentioned in the question. The mean score is 2.75, with a standard deviation of

1.18, suggesting a moderate variability in perceptions but with a general trend favouring vocabulary and writing structure enhancements as the primary advantages of AI in language learning.

4.1.3.4 Student Satisfaction with AI-Driven Language Feedback

Table 3 below presents data on student satisfaction levels regarding the feedback provided by AI tools.

Table 3. Student Satisfaction with AI-Driven Feedback

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Very Dissatisfied	1	2.8	2.8	2.8
Neutral	12	33.3	33.3	36.1
Satisfied	22	61.1	61.1	97.2
Very Satisfied	1	2.8	2.8	100.0
Total	36	100.0	100.0	

Table 3 illustrates that student satisfaction with AI-driven feedback is largely positive, with a mean satisfaction score of 3.61. Specifically, 61.1% of respondents reported being satisfied, and 2.8% expressed being very satisfied. Notably, one respondent indicated being very dissatisfied, while there were no votes for the 'dissatisfied' category. This denotes that while most students appreciate AI-driven feedback, there is a minority who may have cautions. The

standard deviation of 0.688 indicates that satisfaction levels are relatively consistent among respondents. However, 33.3% of participants remained neutral, highlighting an area for potential improvement in how AI-generated feedback is perceived.

4.1.3.5 Student Recommendations and Additional Comments

The data shows that a significant majority of respondents (91.7%) would

recommend AI tools for language feedback to their peers, reflecting a strong positive attitude towards their effectiveness. Only a small minority (8.3%) indicated they would not recommend these tools. Additional comments from students highlight the value of AI in their learning experiences, with many citing its convenience and speed. Comments such as "AI that Snapchat provided is my best friend" and "I simply use ChatGPT a lot; it's a life-saving app" emphasise students' reliance on AI tools for not only language learning but also general assistance. Overall, findings highlighted the belief that AI tools promote language feedback and learning and provide significant advantages to language learners.

4.2 Discussion

To reiterate the research findings, the study sought to investigate the use and perceptions of EFL university students concerning AI-driven language feedback tools and applications in their out-of-class language learning. 36 students, with an average age of 21 and from diverse academic levels, participated in the study. A significant majority of them adhered to AI for language learning and language feedback outside the classroom, with

ChatGPT, Duolingo, and Grammarly as the widely used AI tools for language feedback. This finding indicates widespread engagement of learners with AI technologies. That is, Algerian EFL students are familiar with AI applications and actively leverage them to support their language learning goals beyond traditional classroom settings. ChatGPT, Duolingo, and Grammarly were the preferred AI tools for language feedback, perhaps thanks to their functionality and ease of use. Plus, the feedback obtained from these applications is instant and personalised.

Additionally, the effectiveness of AI tools, particularly with regard to vocabulary building and writing structure suggest that these tools that these tools may provide scaffolds to learners to extend their vocabulary bank as well as assist in organizing ideas clearly during writing tasks, which improves coherence in writing. This finding indicates that AI can serve as an instrumental bridge for enhancing language proficiency and writing skills.

That said, there was a hint of hesitance and caution when it came to the perceived accuracy of AI feedback. The mean accuracy rating of 3.47 entails that regardless of students' acknowledgment of the potential advantages of AI tools, some appear less confident in the reliability of the feedback provided. This ambivalence is also found in Nazaretsky

et al. (2024), who reported reservations about the accuracy and credibility of AI-generated feedback. Although some participants showed credibility concerns, many others recommended AI-driven tools for language feedback. This indicates that their benefits are greater than their limitations.

The study underscored ChatGPT AI model as the leading AI tool opted for by the learners. It is then followed by Duolingo and Grammarly, respectively. This preference for ChatGPT is evident as it is very common, especially for written interaction and for written feedback, to be precise. This finding aligns with findings from Chan and Hu (2023), though the difference lies in that their study targeted a wider range of university students compared to the limited number of participants in this current study. Duolingo, on another side, might be featured for the gamified experience it offers and its simplicity and speed in supplying instant feedback. Hadina et al. (2023) study equally highlighted Duolingo as an effective tool according to students' perceptions, though in their study, Duolingo was the sole AI application researched and its major emphasis was language learning in general, not AI-driven language feedback in particular. Similarly, Grammarly had a remarkable share of votes possibly thanks to its substantial assistance with grammar and style corrections. To cut it short, the results

highlight learners' preference for AI applications and tools that offer personalised and real-time feedback, which serves their individual preferences.

According to the results, the participants' perceptions pertinent to the use of AI tools for language feedback align with the TAM framework, which purports that the perceived usefulness of technology increases its adoption. In this study, the learners' appreciation of AI tools like ChatGPT and Duolingo can be attributed to their perceived effectiveness in improving language skills. More to the point, the results support the constructivist learning theory in the sense that learners actively engage with AI tools in their out-of-class activities to improve their English skill level, which is an outstanding leap towards autonomous and self-directed learning.

Implications

The implications that can be derived from these findings are as follow. First, AI tools are instrumental for fostering autonomous language learning among EFL learners. The high usage rates and positive perceptions indicate that these tools are becoming indispensable in the student's educational journey. However, the mixed responses regarding the accuracy of AI feedback call for ongoing improvements in the functionality and reliability of these applications. One

way to enhance AI-driven feedback credibility is enhancing the precision of AI feedback mechanisms, which could mitigate students' concerns and increase the effectiveness of these tools in language learning. Regardless of the demerits, the overall satisfaction and the willingness of students to recommend these tools indicate that they do meet the learners' expectations. Therefore, they may serve as an addition to traditional instruction and support the shift towards more self-directed language learning practices.

Limitations

In light of these implications underscored by the findings, it is equally important to acknowledge the limitations the study encountered. Chief among the limitations was the time factor; time constraints made it problematic to conduct in-depth research and thoroughly explore previous research in the literature. Additionally, the study satisfied itself with descriptive statistics, while it could have extended to hypothesis testing and inferential statistics. Moreover, time constraints lead to an early halt in data collection, limiting the participants to only 36 volunteers, a remarkably small sample. A longer data collection period might have allowed for a larger sample size and greater gender diversity, as most participants were female students.

Recommendations

For recommendations, since university students demonstrated large satisfaction with AI-driven feedback tools and applications, universities should encourage their use for independent learning. Educational institutions should facilitate students' access to premium versions of applications and tools for full functionality, as this could enhance feedback accuracy and quality, particularly given the noted limitations regarding feedback accuracy. Some applications and tools require access to premium versions for full functionality. Facilitating learners' access to advanced content could increase feedback accuracy and quality, particularly given the noted limitations in terms of the accuracy of feedback. Further, AI feedback tools and applications could be used as part of learners' language tasks by the teachers. Students could use AI for language practice and feedback, followed by discussion sessions to clarify inadequacies and problems. Policymakers should support AI literacy programmes and ensure equitable access to AI tools across educational institutions for learners to access, especially outside of the classroom. Additionally, students should be sensitised about the use of AI tools for language feedback, their limitations, and how to use them responsibly and ethically. Last but not least, further research is needed on AI-driven language feedback, typically strengths and limitations, which would help

develop and enhance these tools for EFL learners' needs. Future studies could benefit from inferential statistics, which would allow for hypothesis testing and assessing relationships between variables.

5. Conclusion

To conclude, this study attempted to explore the use and perceptions of AI-driven language feedback tools among Algerian EFL university students. The results helped respond to the research questions posed, indicating acceptance and use of AI feedback tools and applications amongst students, with ChatGPT, Duolingo, and Grammarly as the most commonly used ones, especially for vocabulary building and writing structure. However, some drawbacks were recorded, typically concerning the accuracy of feedback according to learners' perspectives. On the whole the study highly encourages the use of AI-feedback tools for feedback in out-of-class learning as it appears promising for Algerian EFL learners. Educational institutions could encourage the use of AI tools in extracurricular learning activities and to provide training for educators and students alike for this purpose.

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