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**Harnessing Artificial Intelligence in English
Language Learning - Transformative Tools for
Personalized Learning Experience**

*Dissertation submitted as a partial fulfillment of the requirement of Master's degree in
Didactics of Foreign Languages*

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Declaration

I, Khaled LARBI, hereby declare that this dissertation, entitled “Harnessing Artificial Intelligence in English Language Learning - Transformative Tools for Personalized Learning Experience” is my own work and has been carried out individually, unless otherwise indicated. All sources and citations referred to have been properly acknowledged, and any assistance obtained has been disclosed.

This dissertation is not a submission to any institution previously for academic credit or degree purposes. I hereby claim that the work presented here is in accordance with the ethical and academic integrity standards required by the University of Tlemcen, Faculty of Letters and Foreign Languages, Department of English.

Khaled LARBI

19/05/2025

Dedication

I dedicate this study to ***ALLAH*** the Most Merciful and the Most Compassionate. His guidance, wisdom, and blessings have been the inspiration behind my strength in this journey. I acknowledge very much the patience, perseverance, and knowledge that have been bestowed upon me, which have allowed me to complete this dissertation. May this study be a reflection of His will and be beneficial in seeking knowledge and truth.

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Abstract

Artificial Intelligence (AI) is transforming the English language learning through the delivery of adaptive and personalized tools that increased the level of interaction and proficiency among students. AI systems offer a personalized learning, instant feedback, and automated grading to enable learners to construct skills efficiently. This research work is a case study which examined the use of AI in English learning through a students' questionnaire addressed to 101 master 1 students in English language and a teachers' interview including 4 teachers in the English Department at Tlemcen and Oran universities. The questionnaires administered to students and the structured interviews conducted with English language teachers are addressed to collect data, which are qualitatively and quantitatively analyzed. The findings indicated that although teachers see the potential for AI, its implementation remained a challenge. Students voiced a strong desire for learning with AI, recognizing its effect on participation, interaction, and skill's acquisition. The study formulated some suggestions on maximizing AI integration in language learning.

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List of Acronyms

AI: Artificial Intelligence

ASR: Automatic Speech Recognition

AWE: Automated Writing Evaluation

CALL: Computer-Assisted Language Learning

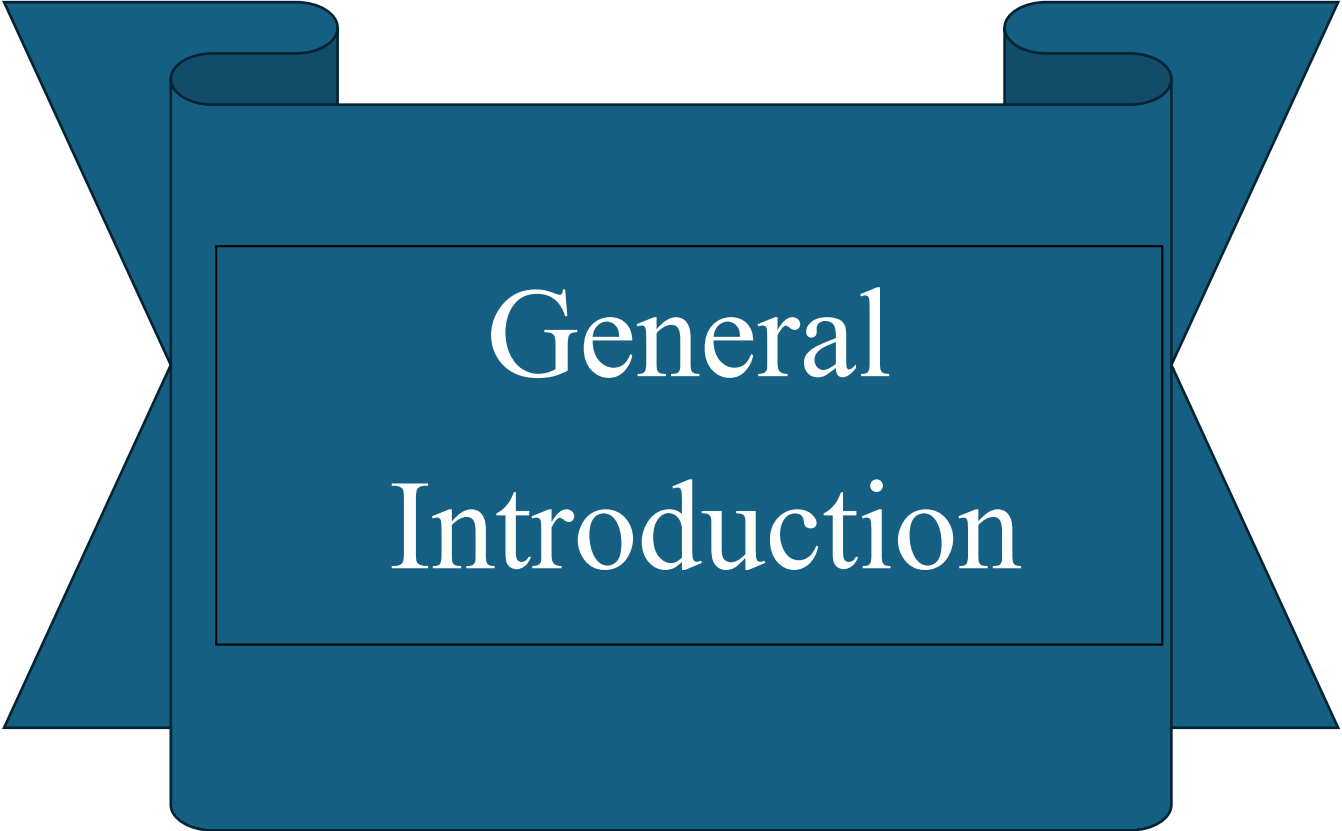
EFL: English as a Foreign Language

ELL: English Language Learning

ELT: English Language Teaching

ITS: Intelligent Tutoring Systems

NLP: Natural Language Processing



General Introduction

The main aim of learning any foreign language is to be able to communicate successfully in that language whether in writing or speaking. Appropriate use of the four language skills (reading, writing, listening and speaking) in different situations leads to successful communication. Artificial Intelligence has invaded every part of individuals' lives without forgetting the educational sector, the most important field in any country. Many EFL learners, even though studying English for the last transformative years, are not familiar with the potential of AI tools on the improvement of learning languages.

The chosen topic of the study has been inspired by the writing and speaking weakness of Master 1 students at Tlemcen and Oran universities. In spite of studying English for many years, in middle and secondary school, and even in the university, students are neither fluent speakers nor good writers and still face difficulties in improving their English language.

Speaking and writing are important language skills that must be mastered by any foreign language learner. Good writers and speakers of English are referred to as knowledgeable of the language compared to others with less language proficiency. Yet, it is noticeable that foreign language learners have difficulties in improving their English language competency, especially when they are supposed to write a whole dissertation and present it orally. From the situation stated above, the study tends to investigate the multiple uses of AI-driven tools in English learning.

The aim of the study is to investigate the use of AI-driven tools in learning the English language by first year master students in the English Department at Tlemcen and Oran universities; in improving their language proficiency and to provide recommendations and possible solutions to utilize them appropriately. Being aware of

these various tools and of the possible ways to employ them help in developing the writing and speaking abilities.

This research study contributes significantly to the existing body of knowledge since it can inform educators, teachers, and policymakers about how language instruction is being supplemented effectively by AI applications and brings into perspective the potential for applying AI for improving English language learning performance, which can improve the students' academic and professional prospects. In addition, this research work can add to the growing body of literature on the application of AI in language learning, and how one can benefit and lose from it.

This research is directed by three fundamental research questions:

1. How can AI-driven tools be incorporated into English language teaching to enhance personalized learning experience?
2. What impact does AI-feedback have on learners' writing and speaking skills in English language acquisition?
3. To what extent can AI contribute to the development of personalized learning in English language students?

To attain suitable responses to the above-mentioned research questions, the following hypotheses are suggested:

1. AI-driven tools can be incorporated into English language teaching to enhance personalized learning experience through the use of adaptive learning platforms and natural language processing applications that can be used to improve engagement and retention.
2. AI-feedback leads to a number of improvements in both writing and speaking skills compared to traditional methods of feed-back.

3. AI-based tools encourage greater autonomy in learners by providing personalized content, instant feedback and self-paced learning opportunities that increase proficiency in English.

The current study is conducted in the English Department at Tlemcen and Oran universities. A descriptive method is employed in this research to answer the research questions mentioned above. The study is based on two formal instruments of research to collect data: a teachers' interview and a students' questionnaire. The teachers' interview is done with English language teachers and the students' questionnaire is addressed to first-year master students. From the interview and questionnaire analyses, the researcher attempts to elucidate the students' attitudes, experiences, and perceptions of using AI-based tools in English language learning. The analysis of data provides a detailed insight into the benefits, issues, and effectiveness of AI tools for enhancing language learning outcomes, teaching practice, and future research.

The present study includes three chapters as follows:

Chapter 1 addresses the review of the literature, covering the use of AI in English language learning, personalized learning, AI feedback, and learner autonomy. Concerning chapter 2, it deals with the methodology, describing the research design, participants, data collection procedures, and data analysis procedures. Finally, Chapter 3 is concerned with the data analysis, interpretation, and discussion of the findings, focusing on the impact of AI tools on language learning outcomes.

Chapter One

Review of Literature

1.1. Introduction

Artificial Intelligence has colonized various fields, including language education in general and English language education in particular. Despite the success of the traditional ways of learning languages such as the English language methods of learning in the past, yet more improvements could be achieved with the help of Artificial Intelligence. For instance, improving the students' ability to communicate is a major goal of teaching speaking and it is necessary to communicate successfully. Even though the English language students at Tlemcen University have studied English for many years, they still encounter difficulties in improving their English language fluency. The incorporation of AI in educational atmospheres promises to transform teaching and learning thoroughly. The aim of this study is to provide the learner and the teacher with some knowledge about the revolutionizing and rapidly growing tool that is Artificial intelligence that majorly provides personalized experiences, enhances students' engagement with AI tools, and improves educational outcomes and feedback.

This chapter provides an overview of AI in education and in language learning more precisely, exploring its role, benefits, challenges, and impact on language learning. It also gives an idea about personalized learning in ELT, AI feedback in English language acquisition, and learner autonomy in English Language Learning (ELL).

1.2. AI in Education

Artificial Intelligence (AI) addresses some of the main challenges in education today, updating teaching and learning practices, and anticipating progress. However,

the rapid technological development certainly brings several risks and challenges, which have so far overtakes debates.

1.2.1. Role of AI in Education

Artificial Intelligence in education refers to the use of AI technologies and tools to enhance teaching and learning processes. AI fosters learner independence, enabling teachers to share responsibilities with students and encouraging proactive learning attitudes (eSchool News, 2024). The integration of AI in language education offers numerous benefits. It can make education more efficient by making routine tasks fully automatic, like grading and attendance tracking, and by providing instant feedback to students (Cambridge English Blog, 2020). This allows teachers to drop their concentration more on instruction and less on administrative works. Additionally, AI can enhance student engagement by making learning more interactive and personalized (Rafalski, 2024).

The role of artificial intelligence (AI) in language education has gained significant attention in recent years. AI has made remarkable advancements and is now utilized in various aspects of language education, encompassing adaptive learning, classroom management, and enhancing educational accessibility (Iqbal et al, 2024, p.348-359). That is to say, AI leads to language education progress in terms of managing the classroom and adapting learning to the actual mode.

1.2.2. AI Technologies in Education

AI technologies are increasingly adopted and adapted in educational settings to support both teachers and learners. AI can digitize administrative tasks, provide personalized learning paths, and offer real-time feedback, thereby enhancing the overall learning experience. According to a (Cambridge English Blog, 2020), AI helps foster learner independence and offers tools that can be integrated into the ELT classroom.

In this line of thought, Manns (2017) states that:

The rapid expansion of technology and digital applications that characterizes the 4th Industrial Revolution is changing the way we live, work – and learn. It's a revolution driven by the fusion and amplification of emerging breakthroughs in artificial intelligence, automation and robotics, and multiplied by the far-reaching connectivity between billions of people with mobile devices that offer unprecedented access to data and knowledge.

As AI technology maintains to evolve, it promises to alter teaching and learning profoundly. Teacher guidance and creativity, combined with AI tools, can significantly improve students' language learning journeys. That is why; several AI technologies are being used in education, including machine learning, natural language processing ;also known as, (NLP), and adaptive learning systems. In fact, machine learning algorithms analyze student data to predict performance and identify learning gaps. In addition, NLP applications, such as chatbots and speech recognition tools, facilitate language learning and provide instant feedback. Adaptive learning systems customized educational content to individual learners' needs, ensuring that each student receives a tailored learning experience. Accordingly, the British Council (2024) provides a comprehensive overview of the employment of AI in education, highlighting key technologies and their applications.

1.2.3. Benefits and Challenges of AI in Education

The integration of AI in education offers countless benefits, such as personalized learning, augmented engagement, and enhanced educational results. In this vein, AI can make education more useful by automating routine tasks and providing real-time feedback. However, it also introduces challenges, including ethical issues, data privacy concerns, and the need for teacher training to effectively incorporate AI tools into the classroom. Addressing these challenges is important to maximizing the potential of AI in education as mentioned meticulously in Cambridge English (2023) paper on English language education in the era of generative AI.

Moreover, one of the advantages of AI is that it can provide an instant response to the students and instructors; thus, changes can be made in a short time. Ross and Kim (2018) point out one of the benefits of AI, which is that it can help personalized content according to the needs and styles of learning. This is well illustrated by Intelligent Tutoring Systems, which have increased performance in math and language arts when applied in these strands to very high levels. It would, therefore, be apparent that synergy between education and the industry offered noteworthy benefits (Schueller et al., 2016, p.27-45). In the near future, advancements in AI will allow for the creation of intelligent teaching programs that can accommodate and support thousands or even millions of students all at the same time. For example, Pearson, an education publishing company, has introduced the development of a lifelong companion that works with AI for learners. This companion will be able to identify learners' strength and weakness point and provide recommendations for fields of study and career paths based on the learner's personality and academic skills. Students who need help will not have to wait days for a response from teachers via email. Instead, they will be able to ask questions to a virtual teaching assistant and receive instant answers (Singh & Hiran, 2022).

However, Williamson & Eynon (2020, p.223-235) have reported that multiple technologies, such as the detecting plagiarism, ensuring the integrity of exams and analyzing student performance metrics are used. These are being used to evaluate students, and they have proved to be extremely beneficial.

According to Chen et al. (2020) the quality of learning in higher education refers to the methods and lessons provided to the learners. The education system must keep high-quality teaching methods so that students can attain their future goals through their studies. Participating in online classes is useful as it provides students with advanced teaching methods to better understand the subject. Online teaching methods

also enable students to ask questions and receive answers at any time of the day or the night, making it easier for them to study.

A significant challenge in language education is catering to diverse learning styles and paces. Advances in artificial intelligence present opportunities for customized and personalized particularly in mathematics. This is because the system assesses each student's current level of knowledge, identifying their strengths and weaknesses. Consequently, it creates a curriculum tailored to the student's proficiency and areas for improvement. This curriculum is then updated based on student progress, and the material is updated and adjusted based on the student's level of proficiency (Borenstein & Howard, 2020, p.61-65). Additionally, it goes through patterns and trends exhibited in various learners, following which the presentation of the subject is improved based on how efficient it is.

However, there are other issues to deal with. First, the rapid development of AI based on a desire to outperform competitors drives prototype testing of standardized learning systems. This situation creates the need to the creation of an artificial intelligence strategy for language education. Secondly, the utilization of AI in education faces significant ethical challenges, including the testing and early-stage prototyping of advanced systems. AI uses large quantities of data to improve the system (Trattner et al., 2021, p.585-594).

Another significant advancement anticipated in this area is the increased and improved use of personalized teaching tools. The incorporation of robots and AI, leveraging sophisticated data analysis, is poised to transform how students' learning progress is measured, learning patterns are identified, and lessons are adapted for future enhancement. This innovation can ultimately support educators and policymakers by providing detailed data analysis, ensuring well-informed decisions are made (Okunade, 2024, p 123-130). Utilizing AI can equip individuals with the technology and skills needed to tackle various challenges, thereby fostering a workforce that is both adaptable and innovative. (Obi, 2022, p.353)

1.3. AI in Language Learning

Artificial intelligence has significantly influenced the language learning process and provided new innovative tools to enhance the acquisition process. Over the times, AI-based language learning tools transformed from basic computer-assisted learning to sophisticated applications supported by machine learning and NLP. Contemporary tools include Duolingo, Grammarly, speech recognition software, and chatbots. They all play their own role in language learning. They provide personalized learning, interactive learning, and adaptive learning experiences for the learner. Moreover, as AI influences English language learning, it has expanded to increase accessibility, efficiency, and effectiveness in language learning contexts.

1.3.1. Historical Evolution of AI-driven Language Learning Tools

The use of AI in language learning has a rich history that goes back to the early development of computer-assisted language learning (CALL) systems. Throughout the years, AI-driven language learning tools have evolved immensely, incorporating advanced technologies like natural language processing (NLP) and machine learning to improve language acquisition.

Another historical evolution explored by Zhang, and Mitchell goes like:

Early Beginnings (1950s-1980s)

- 1950s-1960s: The concept of AI began to take shape with the Dartmouth Conference in 1956, where the concept "Artificial Intelligence" was made. Early AI research focused on simulating human reasoning and creating expert systems.
- 1970s: The first attempts at AI-driven language learning tools emerged, like the Intelligent Tutoring Systems abbreviated (ITS), which intended to provide personalized instruction based on predefined knowledge bases (Zhang, 2024).

Development and Expansion (1980s-2000s)

- 1980s: The International Journal of Artificial Intelligence in Education was established in 1989, marking a significant milestone in the field. Research during this period focused on developing AI-based tools for classrooms and understanding learning processes (Zhang, 2024).
- 1990s: The rise of the internet and advancements in computational power led to more complex AI-driven language learning tools, including adaptive learning systems and virtual tutors (Mitchell, 2023).
- 2000s: The emergence of machine learning and data analytics revolutionized AI-driven language learning tools, enabling more personalized and adaptive learning experiences (Mitchell, 2023).

The Modern Era (2010s-Present)

- 2010s: The neural networks and deep learning techniques integration enhanced the capabilities of AI-driven language learning tools. Companies such as Google began developing and promoting AI-based educational technologies (Zhang, 2024).
- 2020s: AI-driven language learning tools became more popular, with apps like adaptive tutoring ones and AI-powered language learning platforms gaining popularity (Mitchell, 2023).

Future Directions

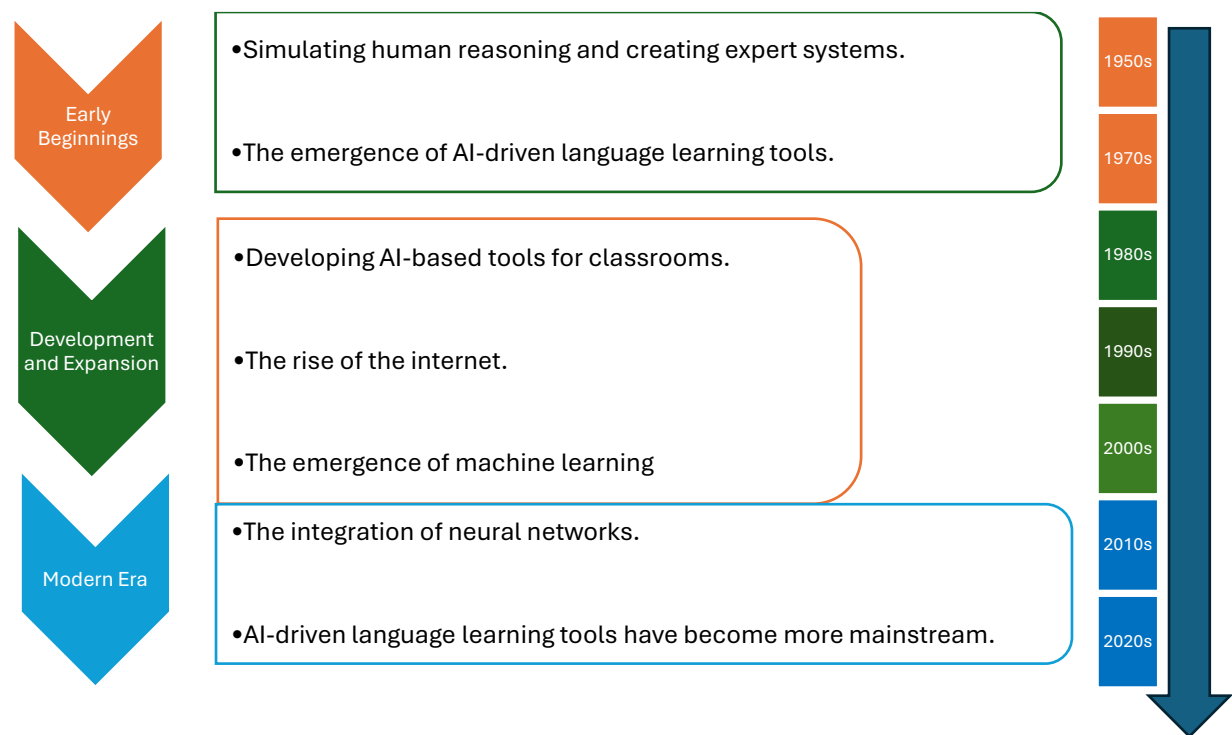
- Continued Innovation: The field of AI-driven language learning tools is expected to continue evolving, with ongoing research and development aimed at improving the effectiveness and accessibility of these tools (Zhang, 2024).

- Ethical Considerations: As AI becomes more integrated into education, ethical considerations such as data privacy, algorithmic bias, and the impact on traditional teaching methods will become increasingly important (Mitchell, 2023).

Additionally, figure 1.1 below shows of the historical evolution of AI-driven language learning tools through time.

Figure 1.1

Historical Evolution of AI-driven Language Learning Tools



This figure is depicted from Zhang, and Mitchell exploratory work.

1.3.2. AI-driven Tools

A variety of AI-driven tools are widely used in language learning, including Duolingo, Grammarly, speech recognition apps, and chatbots.

1.3.2. 1. Duolingo

Duolingo is an AI-based app which is widely used in education, specifically for language learning. According to Kusumadewi & Widyastuti (2018) p.172–186, Duolingo is an application that helps learners study languages for free. Developed by Luis Von Ahn and Severin Hacker, the application was uploaded in 2011. It offers 68 language lessons in 23 languages and 22 additional courses (Kusumadewi & Widyastuti, 2018). With over 120 million users world widely, Duolingo has become one of the most popular tools for language learning, focusing on grammar and vocabulary through multiple topics (as cited in Mahbub et al., 2020, p 69–80). Moreover, Duolingo plays a personal language instructor; offering customized teaching and engaging learners through game-like activities (Duolingo as cited in Teske, 2017).

Furthermore, as a non-charging access app, Duolingo has enabled learners from all over the world with different socioeconomic backgrounds to learn languages with no hindrance. The teaching of a foreign language can be improved by providing cost-effective, innovative, and resource-conserving strategies for students. Gamification can target these needs by helping EFL teachers create, implement, and design instructional materials that are both useful and cost-effective (Rodrigues et al.; Toda et al. as cited in Mahbub et al., 2020). This aligns with Duolingo's motto, "Free language education for the world" (Munday, 2016, p. 85).

In summary, Duolingo is a free application that assists learners in acquiring languages in a fun and personalized manner.

1.3.2. 2. Grammarly

Fitriana (2022), p. 15-25 says that Grammarly is a sophisticated artificial intelligence (AI), created to interpret phrases that are written in English. Its team of computer linguists and deep learning engineers create cutting-edge algorithms that study and analyse the rules and recent ways of good writing by studying phrases from academic

papers. It runs in the cloud online rather than on the user's computer offline that is why it is always developing AWE (Automated Writing Evaluation) works on artificial intelligence. Stevenson (2016), p. 1-16 demonstrated that AWE can be a useful instructional tool in the writing classroom. AWE helped low-performing writers by providing constructive feedback on their work. The same way, Grammarly is powered by a sophisticated system that gather artificial intelligence rules, developments, and techniques such as deep learning, machine learning, and natural language processing (Fitria,2021, p. 65-78).

1.3.2. 3. Speech Recognition Apps

Speech technology allows the students with a beginner level to practice spoken language outside the classroom only when it is adopted and adapted properly. Dialogue-based software uses fixed-response. ASR lets learners have a simulated conversation with a computer. Practicing daily with such programs should help students improve fluency and confidence immensely. Moreover, the software can provide the individual with instant feedback on pronunciation, which is something that is often lacking in the language classroom and give a score on phonetic accuracy. Visual representation of waveforms and pitch curves help students in perceiving how their prosody digresses from the correct form. Computer animations illustrate the inside of the vocal tract and the movements of the human vocal device, which is the mouth, that are necessary for proper articulation of sounds. Features such as these should be very helpful to teachers who do not have the resources to instruct students individually in pronunciation.

In summary, Grammarly is mostly used to evaluate pronunciation and fluency, offering instant feedback

1.3.2. 4. Chatbots

Chatbots have emerged as innovative tools in language learning, offering learners interactive and personalized experiences. They provide immediate support by

answering questions, offering explanations, and delivering additional resources, thereby improving the learning process (Chaves et al., 2023, p. 1-23). Furthermore, chatbots can work in various roles, such as acting as interlocutors, simulations, and sources of recommendations, contributing to diverse language learning strategies (Huang et al., 2022).

Albeit their potential, the effectiveness of chatbots in language education is completely influenced by factors like technological limitations, novelty effects, and cognitive load. Addressing these challenges is essential for optimizing the benefits of chatbot-assisted language teaching (Huang et al., 2022). Continued research and development are important to fully harness the capabilities of chatbots in supporting and enhancing language acquisition.

In summary chatbots facilitate the practices of conversations, allowing learners to interact with language partners in the virtual world.

1.3.3. Impact of AI Tools on English Language Acquisition

This table is based on general knowledge and researches about the impact of AI tools on English language acquisition. AI tools have both positive and negative impacts.

Table 1.1

Positive and Negative Impacts of AI Tools on Language Acquisition

Positive Impact	Negative Impact
- Personalized Learning - Real-time Feedback - Enhanced Engagement - Accessibility - Enhanced Vocabulary Acquisition - Improved Pronunciation	- Over-reliance on Technology - Lack of Human Interaction - High Implementation Costs - Limited Social and Emotional Learning - Potential Data Privacy Concerns - Technical Issues and Reliability

- Greater Access to Diverse Learning Materials - Increased Autonomy in Learning - Interactive Learning Experiences - Data-Driven Insights - Customizable Learning Paths - Motivation through Gamification - Seamless Integration with Other Educational Tools	- Possible Cultural Bias in AI Algorithms - Reduced Face-to-Face Communication Skills - Risk of Inequity in Access to Technology - Dependency on Internet Connectivity - Limited Adaptability to Individual Learner's Unique Needs - Overwhelming Amount of Information - Possible Reduced Teacher-Student Interaction - Potential for AI Misunderstandings or Errors
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This table was summarized from many sources.

The following table outlines the positive and negative impact of AI tools on English language acquisition. English language learning is facilitated by AI technologies through provision of adaptive learning, immediate feedback, and interactive learning. They improve vocabulary, pronunciation, and accessibility and motivate learners. Limitations are overdependence on technology, reduced human interaction, high prices, and potential data privacy concerns. Appropriate balance between use of AI and traditional methods is required to provide maximum benefits with minimum difficulties.

1.4. Personalized Learning in ELT

Personalized learning has radically transformed the way ELT is taught through the personalization of instruction according to individual learners' needs, interests, and levels. As a means of tailoring content, pace, and methods to maximize student engagement, personalized learning enhances language learning through effective education that is more flexible. The significance of personalized learning is thus in its efficacy in promoting independence among learners, improved comprehension, and heightened motivation through tailor-made learning experiences. Unlike traditional

language learning, technology is leveraged in AI-driven personalized methods to provide adaptive feedback, real-time assessments, and immersive learning experiences to revolutionize the way people learn languages.

1.4.1. Definition

Generally speaking, personalized learning is an educational approach that fixes instructions to meet the individual needs, interests, and abilities. It aims to provide customized learning experiences that enable students to progress at their own pace and achieve their personal academic goals. From an EdTech perspective and in the context of educational technology, personalized learning involves using data-driven tools and algorithms to create adaptive learning paths. These tools analyze students' performance, preferences, and learning styles to deliver content and resources that best suit each learner's unique needs (Tate, 2025).

From educational perspective, personalized learning is a teaching method that involves understanding each student's strengths, weaknesses, and learning preferences. Educators use this information to design lessons, activities, and assessments that cater to individual students, fostering a more engaging and effective learning experience (The Glossary of Education Reform, 2015).

From pedagogical perspective, personalized learning is a student-centered approach that emphasizes the importance of voice and choice in the learning process. It encourages students to take an active role in their education by setting their own goals, selecting learning materials, and demonstrating their understanding in ways that align with their interests and abilities (Tate, 2025).

In a nutshell, personalized learning refers to customizing educational experiences to meet the individual needs, interests, abilities, and learning styles of each student. It involves creating tailored learning paths that adapt to students' progress and preferences, ensuring that they receive the most relevant and effective instruction.

1.4.2. Significance

Personalized learning plays an important role in modern education by customizing instruction to meet the individual needs, interests, and abilities. Recent studies have shown that personalized learning can significantly improve student performance, with research indicating gains in various academic areas when tailored instruction is implemented (Bernacki et al., 2021; Abbes et al., 2024).

However, personalized learning is also full of challenges, such as ensuring proper access to technology and addressing the diverse needs of all the different students. While AI-driven tools can provide personalized recommendations and real-time feedback, they may lack the empathy and nuanced understanding that human teachers offer. Additionally, the implementation of personalized learning requires significant financial investment and infrastructure, which may not be feasible for all educational institutions, potentially widening the gap between different socioeconomic groups. Addressing these challenges is essential to realize the benefits of personalized learning and make sure that all students have the opportunity to succeed (Wei et al., 2024).

1.4.3. Traditional Language Learning Vs AI-driven Personalized Learning Methods

Traditional language learning methods often represents a one-size-fits-all approach, where all students receive the same instruction regardless of their individual needs, interests, and abilities. In contrast, AI-driven personalized learning methods use data-driven insights to create tailored learning experiences, making education more effective, motivating, and engaging for each student.

a- Traditional Language Learning

Traditional language learning methods have been the foundation of education from the beginning of teaching yet a long time ago, emphasizing face-to-face interaction with teachers and peers in a structured classroom environment. These methods

prioritize social and cultural immersion, enabling learners to engage in meaningful conversations and cultural exchanges. The role of the teacher is essential, giving direct instruction, guidance, and immediate feedback. However, traditional methods often follow a standardized curriculum that may not cater to the diverse needs of individual learners, potentially resulting in the one-size-fits-all approach. The fixed pace and reliance on physical resources can also limit accessibility and flexibility.

b- AI-driven Personalized Learning

AI-driven personalized learning methods offer a more adaptive and flexible approach to language acquisition. Providing advanced algorithms, these methods studies learners' performance, interests, and learning styles to deliver customized recommendations and immediate feedback. This individualized approach improves motivation and engagement by allowing learners to progress at their own pace and drop their focus on areas where they need improvement. AI-driven tools can provide interactive and gamified learning experiences, making language learning more engaging and manageable. However, challenges such as potential over-reliance on technology, lack of human empathy, and significant financial investment in infrastructure need to be addressed to fully harness the benefits of AI-driven personalized learning.

1.5. AI Feedback in English Language Acquisition

Artificial Intelligence (AI) has revolutionized English language learning feedback systems, offering learners instant, data-driven input to enhance their skills. The theoretical framework of AI feedback is centered on its ability to analyze language patterns, quantify proficiency, and offer personalized corrections. AI-powered feedback programs, such as automated writing scoring software and speech recognition tools, significantly impact learners through enhanced accuracy, fluency, and comprehension. Compared to human teacher feedback, AI-based methods offer real-time feedback,

scalability, and consistency, even though human contact remains essential for delicate guidance and affective support. As AI technology continues to evolve, its applications in language learning grow, shaping more adaptive and effective feedback processes.

1.5.1. Theoretical Background on AI Feedback in English Language Acquisition

AI-based tools have significantly transformed learning English language in terms of tailoring learning and providing instant feedback. Jegede (2024), p. 06-19 also conducted a study whose focus was to explore the effects of these tools on learner attainment and attitudes. The study utilized 200 participants from four international schools and observed that 72.5% of the learners rated the AI tool personalization highly, whereas 80% of them believed that instant feedback was helpful towards improving language acquisition. Additionally, the study indicated issues such as technical issues and human interaction requirements and cited the importance of proper-planned integration between AI tools and traditional methods. The findings stress the capability of AI-based tools in enhancing learning fun and fitfulness and avoiding challenges associated with implementation and access.

English language learning AI feedback is grounded in individualized learning theories, cognitive development, and adaptive instruction. Artificial intelligence-based feedback systems employ natural language processing (NLP) and machine learning algorithms to read learner responses, recognize mistakes, and provide individualized corrections. The systems follow constructivist learning theories that emphasize active engagement and individualized learning experiences. Research shows AI feedback enhances language ability through on-the-fly corrections, adaptive learning routes, and data-based analysis of learner progress. But whereas AI feedback makes efficiency and availability more possible, it must be deliberately blended with traditional instructional methods such that a harmonized interaction encompassing human touch and contextual awareness is realized.

1.5.2. AI-based Feedback Systems & Impact on Learners Skills

AI-based feedback mechanisms have emerged as revolutionary tools of learning, particularly in developing the abilities of students. Using natural language processing (NLP) and machine learning algorithms, these mechanisms provide individualized, real-time feedback to individual students based on their unique requirements. For example, writing assessment software tools read students' essays, proposing detailed changes in grammar, coherence, and vocabulary.

Similarly, intelligent tutoring systems also engage learners through exercises with varying difficulty in response to students' performance. Research has unveiled that not just do these sorts of systems provide better learning outcome but also provide independent learning because they empower the students to recognize and correct weaknesses by themselves. Nevertheless, these problems like the risk of bias in algorithms as well as requiring human monitoring still remain imperative ones, Shi, H., & Aryadoust, V. (2024), p. 187-209.

1.5.3. AI Feedback Vs Traditional Teacher-Feedback

Both conventional teacher feedback and AI feedback systems have something to offer in the classroom. AI feedback is very strong in terms of speed, consistency, and scalability, giving immediate and personalized feedback to large numbers of learners. For example, AI software like Grammarly can quickly identify grammatical errors and suggest ways to correct them, with objective and consistent feedback. On the other hand, conventional teacher feedback offers emotional depth and humanness. Teachers can offer context-dependent guidance and emotional reassurance, which are crucial for the fostering of motivation and engagement.

As per research, combining AI efficiency with teacher feedback's empathetic human touch is an optimum balanced approach to maximizing learning gain without losing the irreplaceable value of human interaction. Luo, M., Hu, X., & Zhong, C. (2025)

1.6. Learner Autonomy in English Language Learning

Student autonomy is important in English language learning, as it allows learners to take charge of their learning process. Autonomy is also linked to self-regulated learning, where learners set goals, monitor progress, and refine strategies in order to enhance their proficiency level. AI applications have had a significant impact in promoting autonomy and motivation through customized learning experiences, adaptive feedback, and interactive participation. These technologies offer the potential for independent practice, instant correction, and tailoring of study methods to individual needs. As AI improves, its role in supporting learner autonomy and motivation in language learning becomes increasingly important.

1.5.1. Autonomy & Self-regulated Learning

Autonomy and self-regulated learning are fundamental components of effective education, enabling students to take responsibility for their learning processes. These approaches are centered on goal-setting, self-regulation, and reflective learning, enabling students to adapt their strategies to achieve desired outcomes. For instance, autonomy-supportive environments encourage learners to make decisions about their study plans, fostering a sense of ownership and motivation.

Practices in self-directed learning such as time management and self-assessment also raise academic attainment and personal development. Research emphasizes that practices of this kind have to be implemented within the system of teaching to develop learning life skills and flexibility in any situation (Admiraal et al., 2024, p. 1-20).

1.5.2. Role of AI Tools in Raising Learner Autonomy & Motivation

AI technologies have been transformational in facilitating learner autonomy and motivation by creating customized and interactive learning experiences. Adaptive learning platforms and intelligent tutoring systems are some of the AI technologies that allow learners to take control of their learning process by offering learning materials tailored to their interests and needs. For instance, gamified learning systems leverage

AI to provide feedback and rewards in real-time that encourage students to set goals and monitor their own progress.

Also, AI-enabled tools like virtual reality (VR) and augmented reality (AR) simulate real-world environments and make learning experiential and interactive, thereby inducing intrinsic motivation. Research has shown that these tools not only enhance academic performance but also self-efficacy development and sustained interest in learning. However, ethical concerns and the digital divide must be surmounted to ensure equitable access and ethical use of AI in education (Gupta, 2024).

1.5.3. Influence of AI-Driven Tools on Learners' Self -Management

AI-powered tools have also greatly influenced learners' ability to manage their learning autonomously and regulate by themselves. These tools, such as adaptive learning systems and intelligent tutoring systems, allow learners to set their own goals, monitor progress, and adjust strategies to achieve desired outcomes. For instance, AI algorithms on Coursera and Khan Academy present learners with customized learning tracks based on personal performance and interest. Additionally, AI-driven applications possess the real-time feedback potential enabling the learner to identify and complete gaps in knowledge by themselves.

Research shows that not only do such tools enhance learning outcomes but also build learners' confidence and motivation towards self-directed learning. However, dimensions of equal access and risk of over-reliance on technology must be addressed to maximize the potential of AI for education to the fullest (Mohebbi, 2025).

1.6. Conclusion

AI technologies have emerged as game-changing forces in education, particularly in learning and teaching English. The review has pointed to the pivotal role that AI plays in facilitating engagement, personalization, and self-regulated learning. AI-based tools, from Duolingo and Grammarly to chatbots and speech recognition software, have demonstrated their ability to enhance linguistic proficiency by offering

personalized feedback and adaptive learning pathways. Besides, AI-powered feedback integration has improved the capabilities of learners and the existence of teacher feedback and AI feedback together highlights that a harmony between technological efficiency and human empathy is important. Personalized learning, facilitated by AI, has been shown to empower learners by addressing their unique needs and preferences. This approach contrasts with traditional approaches, offering a more learner-centered experience. Further, AI plays a significant role in developing autonomy and motivation, allowing learners to be self-directed in their learning and to cultivate intrinsic motivation.

Although the advantages of AI in education are far-reaching, difficulties like ethical implications, technology dependency, and disparity in access must be given utmost attention. Mitigating these difficulties is paramount to achieving sustainable and equitable implementation of AI in education. That is why a chapter of methodology and data analysis is followed.

Chapter Two

Research
Methodology and
Design

2.1. Introduction

The previous chapter introduced, in brief, the literature review about the increasing role of Artificial Intelligence (AI) in education, with a focus on language learning in addition to the historical evolution of AI-driven language learning tools, plus its significant impact in providing personalized experience, instant feedback and encourages learner's autonomy. While this chapter deals with the methodological part of the study including a description of the research design, the employed method, the sample population and the instruments of research.

This study took place in the Department of English at Tlemcen and Oran universities during the academic year 2024-2025. The method used is a descriptive method and a mixed approach that includes both quantitative and qualitative. The population consists of a sample of master 1 English language students and a group of English language teachers, both at the same universities to ensure variation in data that have been collected.

2.2. Research Design

In order to answer the research questions, a descriptive method is used, based on both qualitative and quantitative approaches. Sandelowski, (2010), p. 77-84 states that *"Qualitative descriptive research provides a comprehensive summary of events in the everyday terms of those events"* and adds that it is more concerned with "what" rather than "how" or "why" something has happened. According to him, in descriptive research, the data may be collected qualitatively; however it is often quantitatively analyzed, using statistical analyses to determine relationships. Therefore, mixed-method is adapted to collect and analyse data in this research. In this line of thoughts, Creswell & Clark, (2021) define the mixed methods approach as the research integrating and mixing both quantitative and qualitative approach within a single study to provide a fuller account of the research problem. They believe that the combination

of both research approaches make the design rich and state that “mixed methods research integrates quantitative and qualitative approaches to provide a comprehensive understanding of complex phenomena. Moreover, Kabir (2016, p. 203-204) states the following:

Mixed methods approach as design, combining both quantitative and qualitative research data, techniques and methods within a single research framework. Mixed methods approaches may mean a number of things, i.e. a number of different types of methods in a study or at different points within a study or using a mixture of qualitative and quantitative methods. Mixed methods encompass multifaceted approaches that combine to capitalize on strengths and reduce weaknesses that stem from using a single research design. Using this approach to gather and evaluate data may assist to increase the validity and reliability of the research.

The current study is a case study of master1 students in the English Department at Tlemcen and Oran universities aiming to resemble a great amount of participants since the use of AI tools is related to more than a single department or university.

2.3. Sample Population

The population is defined by Willie (2024), p. 75-79 saying that "a population in research refers to the entire group of individuals or elements that share common characteristics and are the focus of a scientific study". He illustrates how sampling methods are essential in selecting the precision and validity of study results. Willie (2024) notes that representative samples constrain bias and enhance generalizability of results to wider populations. He adds that non-representative samples, while easy in certain circumstances, have constraints that researchers must appreciate. Besides, according to Kabir (2016, p. 169), “the sample is part of the population that represents the same characteristics of the population”.

In this study, the researcher opted for purposive sampling with 4 EFL teachers and 101 students in order to gather in depth data from different viewpoints. All participants are from Tlemcen and Oran universities.

Master 1 students and EFL teachers from the English Departments at Tlemcen and Oran universities made up the whole population of the study. The researcher has opted for Master 1 students on the basis that the latter have already learnt English language skills at university and experienced many situations in which they had to rely on AI tools to finish an assignment or do a presentation, therefore, they can provide useful data which help to grasp the role of AI in education in improving their learning experience. For the purpose of providing the desired information about this population, a questionnaire was designed via Google form and shared online on Facebook groups, and emails in order to reach the largest possible number of participants. The sample consists of 101 students and 04 teachers.

2.3.1. Teachers' Profile

Four teachers were selected to participate in a structured interview as a research sample. They work in the English Department, the Faculty of Letters and Foreign Languages at Tlemcen and Oran universities. All teachers are Ph.D. holders and their experience ranges from 10 to 15 years.

2.3. 2. Students' Profile

The participants in the study were Master 1 EFL students from the Department of English at the Faculty of Letters and Foreign Languages at Tlemcen and Oran universities. They have been using AI tools from the first year at university considering Duolingo and other applications as quite popular. Master 1 students are more likely to have experience with AI tools because they were growing with them plus the long period of exposure to these tools in the department in comparison to L1, L2, and L3 students.

2.4. Data Collection Instruments

Willie (2024) asserts that data collection is an imperative research step process. He gives the definition that it is the process of seeking information in an organized way in order to address research questions and achieve study objectives. Willie (2024) suggests that proper use of data collection processes is important to achieve credible and valid findings. He further refers to ethics, such as confidentiality of the participants and informed consent. There are several methods to collect data; therefore, a teachers' interview and a student questionnaire were used in the current investigation.

2.4.1. Teachers' Interview

An interview is a serious and intentional discussion that occurs between an interviewer, who guides the process by asking questions, and an interviewee, who responds to these questions. This method is an effective means of obtaining comprehensive information as it allows researchers to investigate individuals' opinions, experiences, and sentiments (Saunders et al., 2009).

Depending on the subject matter of research, three kinds of interviews may be employed. According the Perry (2011), there are three kinds of interviews, structured, semi-structured and unstructured. First, structured interviews involve reading to the interviewee a predetermined list of formalized questions in a fixed order that is not altered during the process of recording their responses. Second, semi-structured interviews provide the researcher with a guide that contains themes and perhaps key questions to be addressed and the guide is not strict and may be modified by the researcher as he or she inserts or leaves out questions based on the direction of the conversation. Third, unstructured interviews are conversational interviews with a broad subject in mind, in which interviewers possess the freedom to talk about the matter without being bound by a guiding list of questions.

The researcher in the current research used a structured interview, considering it less than other kinds of interviews in time-consuming within the instructional and administrative limitations. The interview was undertaken to determine EFL teachers' perceptions about AI and its various tools that help learners. Besides, it attempted to uncover teachers' perceptions of the use of the AI tools themselves to provide personalized courses, instant feedback and learners' autonomy.

Before starting the interview, teachers were requested to provide information regarding their roles in the Department of English, including their teaching experience, specialization area, and AI tools they use in their academic profession. This information was used to outline their academic profiles. The interview consisted of seven questions seeking to explore the perceptions of teachers regarding the use of AI tools from the side of their students in the English Department. It also explored the utilization of AI tools by teachers in instruction and their perceptions about ZOOM and MOODLE as learning platforms for the dissemination of lectures.

- **Question one** aimed to know the teachers' experience with the application of AI-powered tools in teaching English.
- **Question two** investigated whether the teachers found AI tools in individualizing learning experiences for learners useful or not.
- **Question three** triggered the teachers to say if they find significant improvement in students' writing or speaking skills through AI-based feedback.
- **Question four** tried to reveal the teachers' opinion about how AI tools encourage learners' autonomy.
- **Question five** inquired about the difficulties that teachers have encountered when implementing AI tools as part of their instruction.
- **Question six** required the teachers to explain if they believe that AI tools can substitute the traditional teaching methods completely in English language teaching.

- **Question seven** was asked to teachers to suggest what should be added or work differently in AI tools to enable more effective English language learning.

2.4.2. Students' Questionnaire

In this investigation, the questionnaire was chosen as a research tool to collect data. For Kabir (2016, p. 208), a questionnaire is a research instrument that is made up of a series of questions and other prompts for the sake of gathering information from participants. He adds that "questionnaires are often designed for statistical analysis of the responses". So as to suit the investigation, an online questionnaire was designed to collect data, it consists of 24 questions scattered into 5 sections designed and administered to Master 1 students requiring picking up the fitting answer from a number of options and providing a full answer when necessary. The questionnaire was designed by Google form and shared online on Facebook groups and send via email and private messages in order to reach the most possible number of participants. The questionnaire was distributed online from December 20th, 2024 to January 4th, 2025. Participants were informed that this study would not be used for any assessment purposes and that their answers will be kept confidential and used only in this research. The data were collected within the two weeks; respondents were 101 students out of 150 and they are considered to be a satisfactory population than expected.

The students' questionnaire aims to gather insights regarding the use of Artificial Intelligence (AI) tools in English Language Learning (ELL). The purpose of this research is to explore how AI-driven tools can enhance personalized learning, impact learners' writing and speaking skills, and foster autonomous learning in Master 1 students. It begins with an introductory paragraph that introduces the research topic and the objectives of the questionnaire. In fact, this questionnaire is a total of 24 items categorized into 5 sections as follow:

Section 1: Students' Profile

Question 01 serves the purpose of collecting demographic information on respondents. This categorizes respondents into age categories, which allows researchers to explore how age dynamics can influence attitudes, behaviors, or experiences with the use of AI tools in English language learning. It also allows for the creation of patterns or contrasts between various age categories, which help in better interpreting the research result.

Question 02 aims to identify the current language ability of respondents. By classifying learners into different levels—novice, intermediate, or advanced speakers—the researcher is able to analyze how AI tools influence learners based on their level. This information is utilized to assess if AI tools are as beneficial for all levels or if the benefits of AI tools vary in line with the level of the learner.

Question 03 seeks to identify trends, such as whether AI tools are more beneficial for long-term learners or those who are just starting their journey. It also provides insight into how time invested in learning English relates to the effectiveness of AI-driven tools in enhancing proficiency.

Section 2: AI Integration in English Language Teaching

Question 04 aims to discover the frequency with which the respondents utilize AI-enabled tools. This is for the purpose of establishing the level to which AI is entrenched in their study routine. By the collection of these kinds of facts, the researcher can analyze patterns of use, for example, if greater usage frequency is associated with greater effectiveness or satisfaction.

Question 05 aims to inform the researcher about which AI-powered solutions are commonly employed by students and whether there are different tools for different aspects of English learning, such as writing, speaking, or grammar. Through this data gathering, the research can track trends and performance in terms of tool usage.

Question 06: The aim from this question is to gauge how well the AI tools adapt to individual needs, i.e., learning pace and style, and the degree to which they provide personalized instructions and support. This query addresses the overall effectiveness of AI in creating an individualized and engaging learning environment.

Question 07 attempts to gather participants' views regarding the perceived advantages of AI tools for learning the English language. It touches on matters such as personalized feedback, adaptation to individual learning pace, grammar and vocabulary enhancement, engagement, and motivation. By establishing which features are most valued by learners, this question identifies where AI tools are doing best and where they can be enhanced.

Question 08 is concerned with assessing whether the participants view AI as capable of addressing their individual challenges in language learning. This question touches on the flexibility and quality of AI tools in providing personalized support for diverse learning requirements, such as grammar, pronunciation, or vocabulary difficulties. The responses will help assess how well these tools perform in satisfying specific learner requirements and where they fall short.

Section 3: Impact of AI-Powered Feedback on Writing and Speaking Skills

Question 09: The aim of this question is to determine the extent of adoption of these technologies and their influence on writing improvements. It aims to explore how AI-based feedback is integrated into the learning process and its role in skill development like grammar, coherence, and vocabulary.

Question 10 deals with the efficacy of AI-based feedback tools in enhancing specific aspects of writing. Through questioning the perceived usefulness of AI feedback, the researcher is able to understand how these tools rate in enhancing aspects such as grammatical accuracy, coherence, and vocabulary enrichment. The question is used to measure the perceived impact of AI on writing capability.

Question 11 seeks to find out whether the students find AI feedback more useful, as useful, or less useful than traditional methods. It provides insight into how much the AI tools are considered compared to humans in terms of writing correction.

Question 12: This question seeks to help the researcher to establish the adoption of AI in addressing topics such as pronunciation, intonation, and stress, and provide information on how learners integrate these tools into the process of acquiring a language.

Question 13 is related to the measurement of the effectiveness of AI-based technology in improving some aspects of speaking capability. By asking participants to rate the utility of AI feedback, this question aims to consider the manner in which efficiently these tools address parameters like intonation, pronunciation, and stress, which are all part of successful communication. It helps to measure the perceived effectiveness of AI in improving speaking skill.

Question 14 seeks to explore participants' attitudes and opinions towards AI as opposed to teacher comments on speaking development. The researcher through this question tries to establish whether participants perceive AI feedback as more useful, as useful as, or less useful compared to traditional modes. This is a perceptive question that facilitates an understanding of the acceptance of AI tools as opposed to human interaction for speaking capacity.

Question 15 deals with the establishment of the perceived impact of AI tools on various parameters of speaking ability. It examines if the participants have observed significant, moderate, or no improvement in pronunciation, fluency, and confidence. This question is used to gauge the effectiveness of AI in enhancing speaking ability and its role in building learners' confidence while communicating.

Question 16 focuses on identifying the impact of AI tools on the confidence of English-speaking learners. It examines if and how significantly these tools have increased, moderately increased, or not changed at all participants' confidence in their

speaking abilities. This inquiry helps to measure quantitatively the psychological and real benefits of AI in boosting confidence and fluency in communication.

Section 4: AI and Autonomous Learning

Question 17 preoccupied with assessing the contribution of AI to independent learning. It asks if participants feel that AI materials have significantly, somewhat, or not at all helped them take responsibility for their learning process. The question provides feedback on how AI helps learners to become independent and self-sufficient in English language learning.

Question 18 concentrated on measuring to what degree AI tools allow learners to take charge of their learning process. It examines if AI tools enhance autonomy by making it possible for participants to set their goals, monitor their progress, and deliberately engage in their learning process. This query provides insight into the role of AI towards ensuring self-directed learning practices.

Question 19 requests the rate at which learners employ AI tools independently in learning English. The question aims to assess the extent to which students employ AI in independent practice and how often they employ the tools outside of school. It provides data on the role played by AI in shaping autonomous learning habits.

Question 20 pursued to discover the participants' opinions regarding the flexibility and versatility of AI tools in promoting independent learning. It examines if the tools provide personalized learning routes, allow learners to focus on areas of weakness, or if they allow reviewing lessons at personal paces. This question functions to identify how AI helps create a personalized and independent learning process.

Question 21 is related to establishing whether participants are motivated by AI tools to become actively engaged in their learning process. It explores the extent to which AI promotes curiosity, resourcefulness, and self-challenge in language learning. This query provides insight into the role of AI in motivating learners to step beyond traditional methods and take charge of their progress.

Section 5: Impact of AI Tools on Students' Learning

Question 22 attempts to gauge participants' general satisfaction with AI tools. It provides an insight into learners' view of the effectiveness, usability, and impact of these tools on their language learning experience. This question enables the identification of areas of success and potential improvement in AI-based English learning solutions.

Question 23 seeks to gather participants' ideas on how to improve AI-based tools. This is an open-ended question by which participants can give their personal thoughts, experiences, and ideas, which can help developers and instructors make AI tools more appropriate to the needs and expectations of learners. It encourages creativity and useful comments from participants.

Question 24 aims to identify participants' perception of the role of AI in shaping the future of English language instruction. It tries to discover whether learners find AI as a critical component of learning, a secondary agent next to human teachers, or rather unimportant compared to traditional procedures. This question provides data regarding the long-term impact and potential of AI to transform language learning.

2.5. Ethical Considerations

During the collection of data, the students and teachers involved in the study were well-informed about the purpose of the study and its objectives, particularly its focus on AI tools as part of language learning. In addition, the participation is voluntary, and everyone being participated in provides clear consent prior to participating in the questionnaires or interviews. They also understand that they have the right to withdraw from the study at any moment without any penalty. Moreover, the insurance of confidentiality of all respondents was done by assuring anonymity of their answers in interviews and questionnaires. Furthermore, the data obtained is stored safely to prevent unauthorized access.

Additionally, the researcher does not put participants at risk in any manner—physical, emotional, or psychological. Also, diverse cultural heritage of Algeria requires prudence so as not to employ questions or procedures that would seem irrelevant or offensive to the participants. Language, tone, and phrasing of questions are culturally appropriate and respectful. Besides, the transparency regarding the research goals, how the data will be used, and its potential impact on e-learning and AI integration in Algerian universities is respected, avoiding any form of deception.

Before conducting the research, the researcher obtained proper approval from the academic ethics committee of the involved universities (Tlemcen and Oran) to ensure compliance with institutional guidelines. As well, the strive to eradicate any methodological or personal prejudice which may have an impact on data collection or data interpretation is respected. For instance, ensuring there is coverage of both experienced teachers and less experienced teachers, and student s across various proficiency levels. Finally, giving the participants the option to view the findings of the research if they wish, particularly if it may give them insight or help them with their teaching or learning methods is also done.

2.6 Conclusion

In short, the chapter introduced an extensive examination of the research methodology employed in the study. It discussed the instruments of data collection utilized—namely, the teachers' structured interview and students' questionnaire—and the necessity of applying a mixed-method approach towards rich descriptions of the application of AI tools in English language acquisition. The ethical considerations highlighted the importance of informed consent, confidentiality, and cultural sensitivity in ensuring that the research would meet moral and professional standards. The study population of Master 1 students and experienced teachers from faculties of Foreign Languages at Oran and Tlemcen Universities were chosen carefully to ensure diversity and credibility of data collected. The detailed study of sample profiles and research

plan strengthened the focus of the study to examine the role of AI tools in personalized learning, independent study culture, and development of writing and speaking skills. Through the application of quantitative and qualitative analysis methods and upholding ethical rigor, the researcher aims to offer genuine, actionable knowledge regarding the implementation of AI-powered solutions in English language teaching, especially in the Algerian setting. This serves as the foundation for comprehending how such innovative technologies can redefine the future of learning and instruction in English language teaching.

Chapter Three
Data Analysis &
Discussion

3.1. Introduction

The previous chapter deals with the methodological part of the study including a description of the research design, the method, the sample population, and finally the interview and the questionnaire which are the main data collection tools. While this chapter deals with the analysis of the results. The students' questionnaires were distributed online from December 20th, 2024 to January 4th, 2025 and the interviews were done within that period too. The data were collected from those instruments of research and the respondents were 101 students and 04 teachers. After data collection, the obtained findings were interpreted and discussed. Some recommendations and suggestions were proposed to help EFL students to consider AI-based tools in their English learning journey.

3.2. Data Analysis

This section will be about analyzing the collected data from a teachers' interview and a students' questionnaire.

3.2.1. Teachers' Interview

As mentioned before, the interview consists of seven questions concerning the teachers' attitudes toward adapting AI tools in learning the English language. The results are reported and discussed qualitatively in the current section.

- Question1: The teachers experience with the application of AI-powered tools in teaching English language
 - The first teacher mentioned the use of AI software like Grammarly to enhance writing and AI speech recognition software to help students improve pronunciation.

- The second teacher stated his experience with using AI tools in classrooms for analyzing text structure and vocabulary, but found them very limiting for in-depth study.
 - The third teacher said that he used AI tools for interactive exercises, like practicing vocabulary related to Algerian historical landmarks.
 - The fourth teacher embraced AI tools as revolutionary learning aids.
- Question 2: The degree of usefulness of AI tools in individualizing learning experiences for learners

Teacher one found that artificial intelligence programs were extremely efficient in personalizing learning. In addition, teacher two said that AI tools were helpful but not all-inclusive. Moreover, teacher three believed that AI resources were worth the personalization but could not serve all the requirements of students. Finally, teacher four was convinced that AI tools were great at personalization and added that students made remarkable gains through apps that could be adapted to the level of proficiency, helping them fill in gaps in skills like listening comprehension.

- Question 3: The improvement in students' writing or speaking skills through AI-based feedback.

The first teacher said about integrating AI that students at Oran University significantly improved their grammar accuracy and fluency. On the other side, the second teacher described the rapid corrections through AI feedback but he declared that students learned better when the teacher explained it. Teacher three, in his side, observed a growth, especially in writing. He explained that students managed to write improved essays on topics such as Algerian independence. However, speaking skills, according to him, required more human engagement in order to build confidence. Finally, teacher four was convinced that AI feedback had empowered students to refine their writing and speaking. He clarified that they were assigned tasks where they

described Algerian festivals, and AI feedback had helped them produce more polished and accurate submissions.

- Question 4: The teachers' view on AI tools encouraging learners' autonomy.

- Teacher one declared that AI-based tools promoted autonomy among his students and added that many students used apps like Cambly on their own to practice speaking with native speakers and get instant feedback.

- Teacher two answered with a firm yes saying that AI could enhance autonomy in theory, but many Algerian students still relied heavily on teacher guidance due to a lack of experience with self-directed learning strategies.

- Teacher three declared that AI made autonomy easy, but stated that in Algeria, the majority of students were still in need of tutoring on how to utilize these resources optimally.

- Teacher four thought that AI empowered students to become self-learners.

- Question 5: The difficulties that teachers have encountered when implementing AI tools as part of their instruction

- Teacher one thought that accessibility was the biggest challenge since not everyone had a laptop or smartphone, and internet connectivity was not reliable in some parts of Algeria. He added that some students needed training to help them utilize AI tools effectively.

- Teacher two was convinced that one major challenge was the over-reliance on AI.

- Teacher three believed that premium quality AI tools were beyond the means of most students, and digital literacy was extremely variable among Algerian students. He explained that these two limitations bounded the mass utilization of AI.

- Teacher four argued that the greatest challenge lied in providing all students with access explaining that poor connectivity in some Algerian rural areas made it difficult for the students to make the best use of AI tools.

- Question 6: The teachers' opinion on the possibility of AI tools substituting the traditional teaching methods completely in English language teaching.

- Teacher one believed that although AI was revolutionary, it could never completely substituted traditional methods. He stated that in Algeria, human contact with instructors was crucial to allow students to grasp cultural nuances and expressions that AI might miss.

- Teacher two believed that AI was best thought of as an add-on to the traditional approaches to teaching. He pointed out that in Algerian universities, the teachers were also expected to inspire creativity and critical thinking, which could not be replicated by AI software.

- Teacher three said that AI enriched traditional instruction by adding additional resources but could not replace the human element and cultural sensitivity Algerian university teachers offered.

- Teacher four believed that traditional methods would always be the bedrock, but AI was becoming an essential support, giving additional ways to get the students involved and upgrade their abilities.

- Question seven: The suggestions that should be added or work differently in AI tools to enable more effective English language learning.

- Teacher one thought that AI developers incorporated scenarios depicting Algerian culture, e.g., idioms, proverbs, and topics pertaining to everyday life.

- Teacher two viewed that AI software would be improved if they could include creative elements, such as group projects where students address problems that were particular to Algeria, such as the history of the Casbah.

- Teacher three believed that learning aspects such as gamification through quizzes about Algerian history or geography would make AI applications more enjoyable and available for students.
- Teacher four suggested that AI software had to provide real-time interactive responses and included Algerian background, such as debates on regional tradition like Chaabi music or how to cook couscous, in order to make learning exciting and relevant.

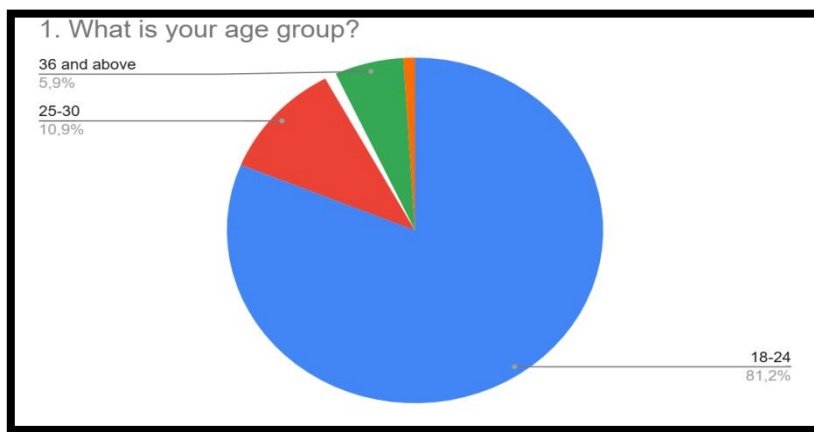
3.2.2. Students' Questionnaire

As stated before, the questionnaire consists of 24 questions scattered into 5 sections.

Question 01: What is your age group?

Figure 3.1

Respondents Age Groups



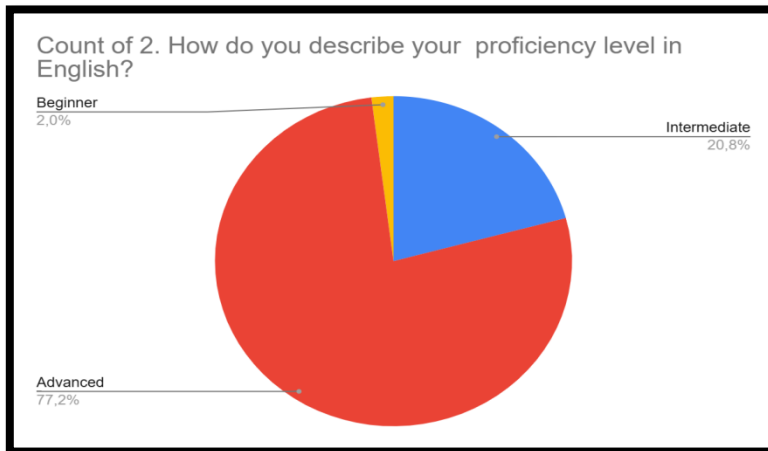
101 responses

The figure above represents the students' answers about their age. It illustrates that most of the participants (81%) are between 18 years old and 24 years old, while (10%) of them are between 25 years old and 30 years old, in addition to the (6%) of students who are 36 years old and above.

Question 02: How do you describe your proficiency level in English?

Graph 3.2

Students' Self-Assessed English Proficiency Levels



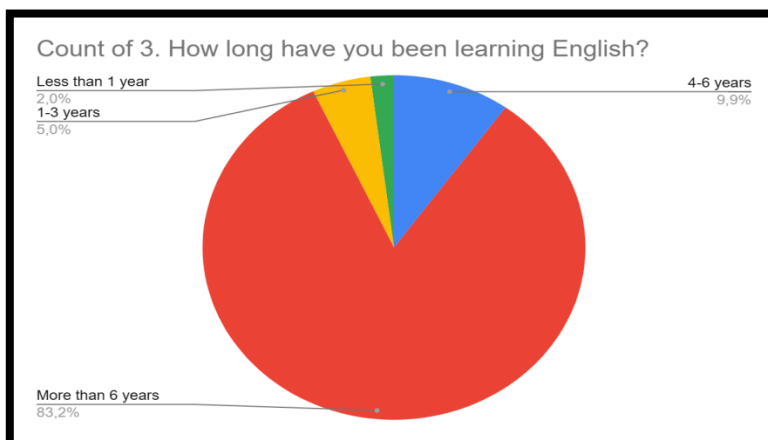
101 responses

As shown in figure 3.2, most of the students (77%) evaluate their English proficiency as advanced, whereas (21 %) of them consider their level as intermediate, however, only (2%) of them assess their level beginner.

Question 03: How long have you been learning English?

Figure 3.3

Students' Exposure to English beyond Class Time



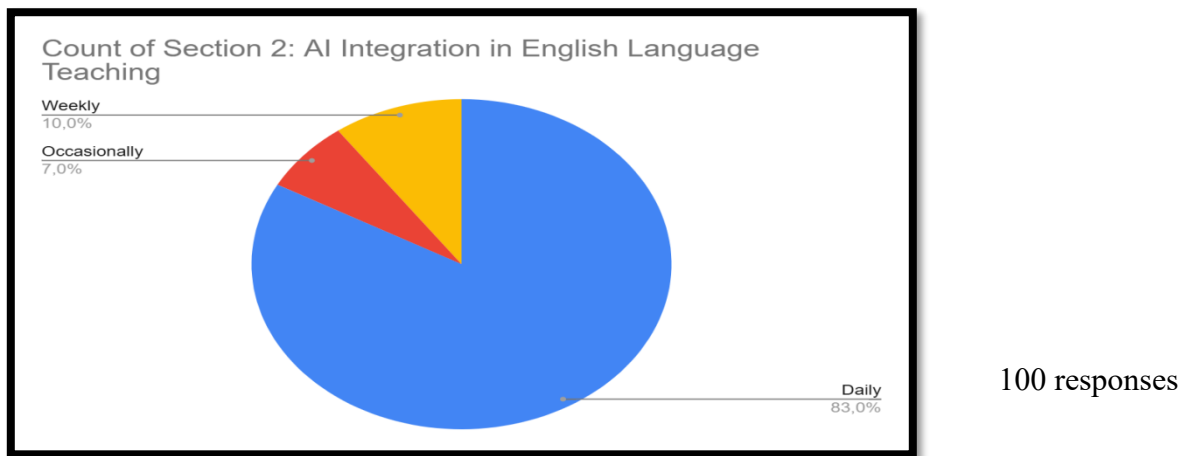
101 responses

The results revealed that the majority of the participant (83%) replied that their time spent learning English was more than 6 years. On the other hand, an important percentage (10%) of students claimed that they spent 4 to 6 years. (5%) of participants only stated that they spent from 1 to 3 years learning English, and (2%) spent less than 1 year.

Question 04: How often do you use AI-powered tools (e.g., adaptive learning platforms, language learning apps, chatbots) in your English language learning?

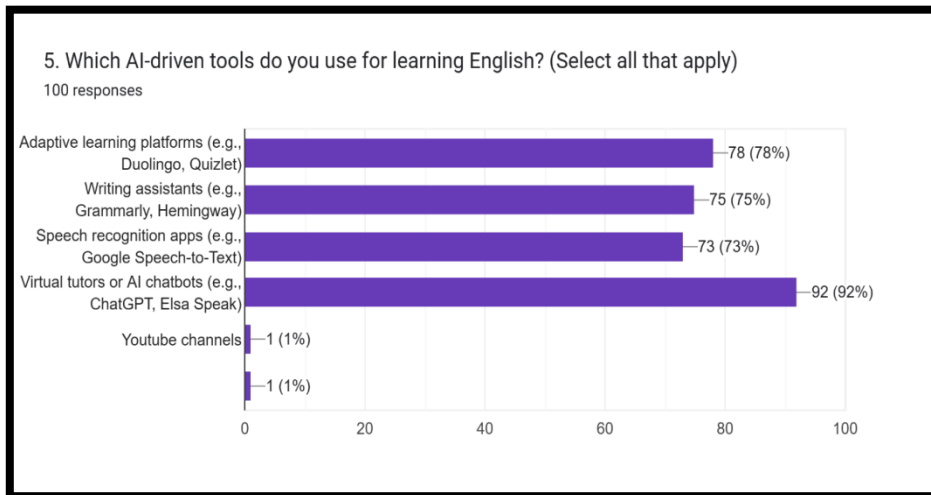
Figure 3.4

Frequency of AI Usage in English Learning



The figure illustrates that 83% of the participants indicate that they use AI-powered tools daily; on the other side, 10% of them assert that they use AI-powered tools weekly and 7% use them occasionally.

Question 05: Which AI-driven tools do you use for learning English?

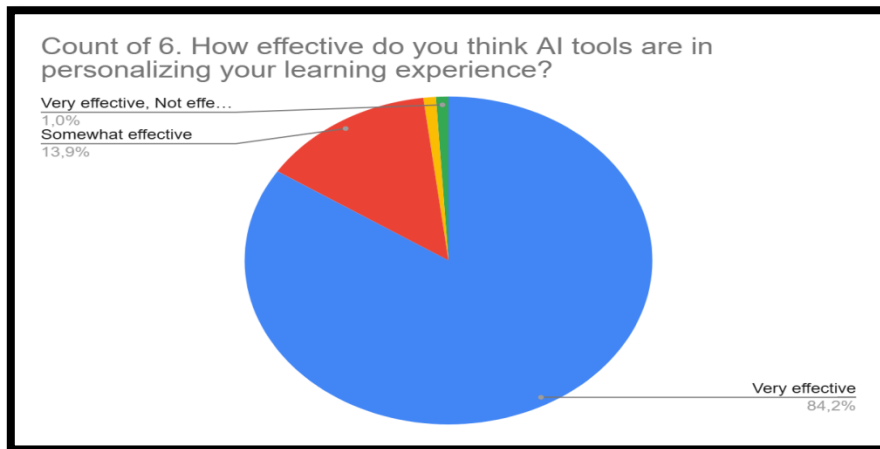
Figure 3.5**AI Tools for English Learning: Popularity and Usage**

The figure above illustrates that a majority of 92% said that they used virtual tutors or AI chatbots (e.g., ChatGPT, Elsa Speak), 78% of them indicated that they used adaptive learning platforms (e.g., Duolingo, Quizlet), followed by 75% who stated using writing assistants (e.g., Grammarly, Hemingway), followed by 73% who used speech recognition apps (e.g., Google Speech-to-Text), whereas, only 1% of them who used YouTube channels.

Question 06: How effective do you think AI tools are in personalizing your learning experience?

Figure 3.6

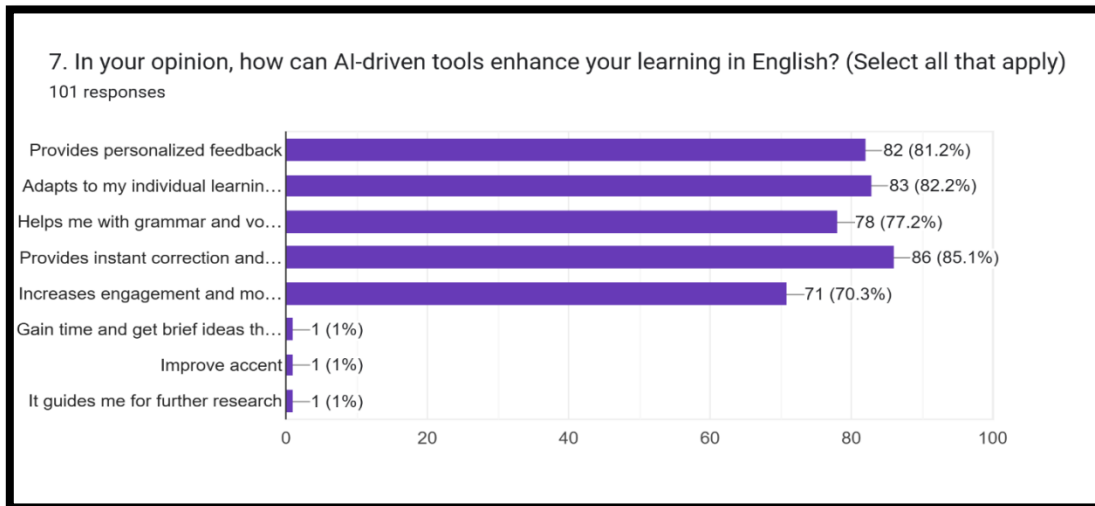
AI Tools for Personalized Learning: Perceived Effectiveness



101 responses

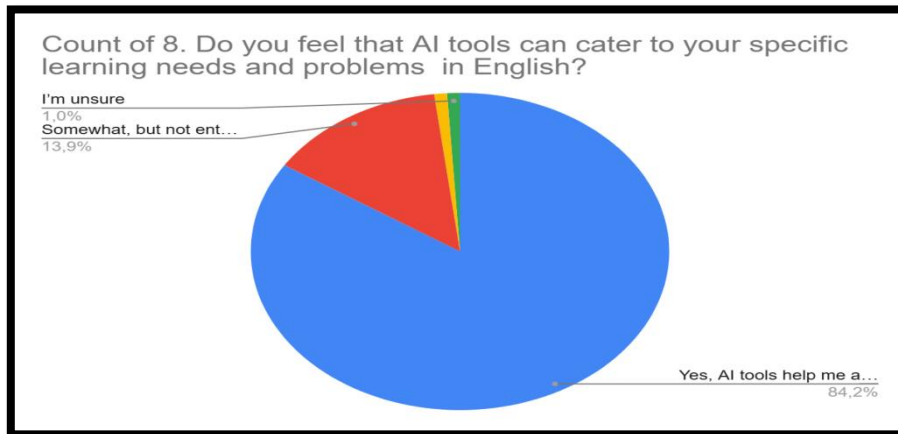
It is shown in the figure that the highest percentage 84.2% of the participants think that AI tools are very effective in personalizing their learning experience, while 13.9% of them said that AI tools are somewhat effective, however, only 01% of the participants think that AI tools are not effective in personalizing their learning experience.

Question 07: In your opinion, how can AI-driven tools enhance your learning in English?

Figure 3.7**Personalized Learning with AI: Perceived Benefits**

The graph above indicates that 86% of the participants said that AI-driven tools enhance their learning in English by providing instant correction and explanations, followed by 83% of them who say that AI adapts to their individual learning pace , followed by 82% of them who say that it provides personalized feedback, also, 78% of them say that it helps them with grammar and vocabulary development, while 71% say that it increases engagement and motivation , and 01% of the participants say that it makes them gain time, improve their accent and go further in their research endeavors.

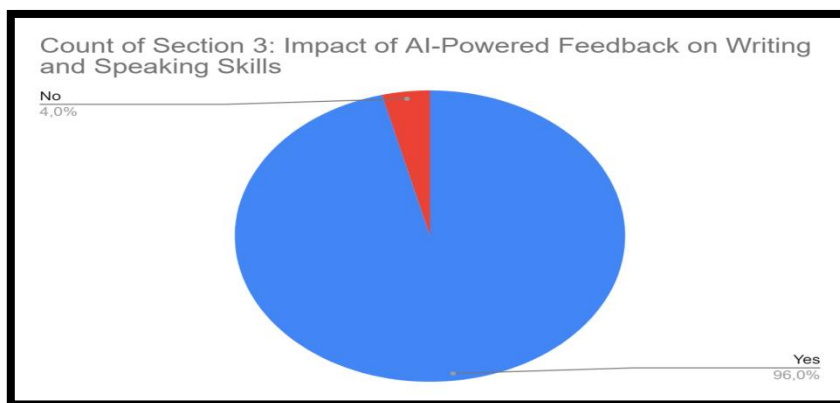
Question 08: Do you feel that AI tools can cater to your specific learning needs and problems in English?

Figure 3.8**AI Tools and Specific Learning Needs: Perceived Support**

101 responses

It is noticed from the pie chart above that 84.2% of participants approve that AI tools help them address specific challenges, while 13.9% say that they somewhat feel that way but not entirely, and finally 01% say that they are not sure.

Question 09: Have you used AI-powered feedback tools for improving your writing skills (e.g., Grammarly, ProWritingAid)?

Figure 3.9**Impact of AI Feedback on Writing Skills**

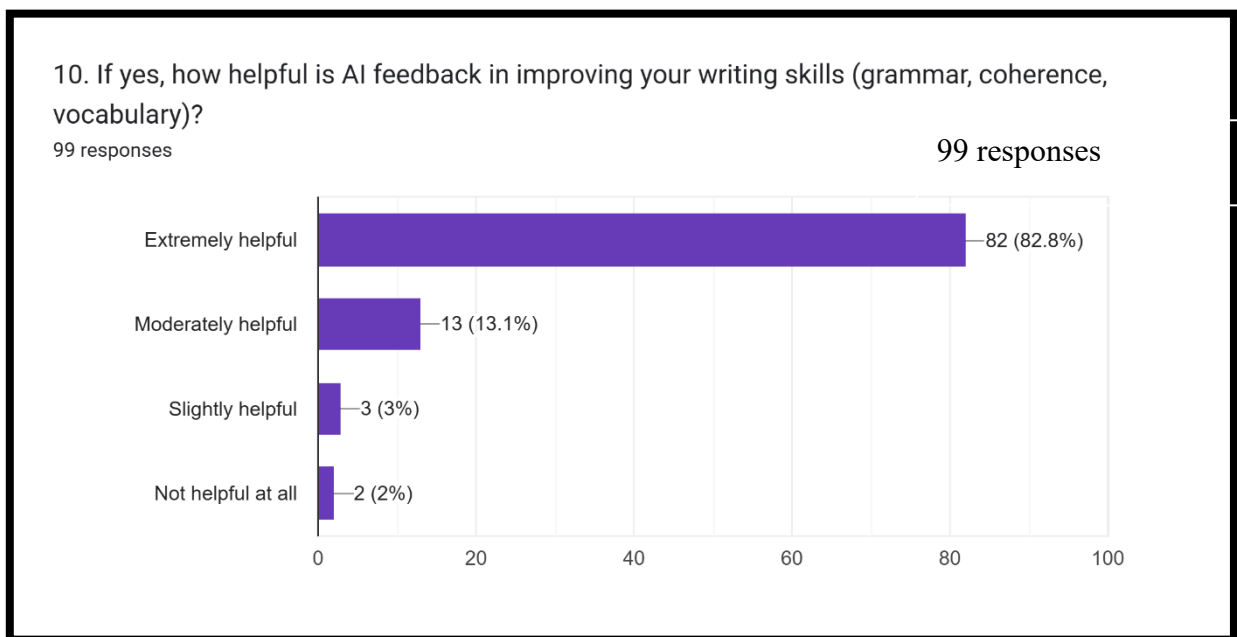
101 responses

It can be seen above that a staggering majority (96%) of the 101 participants support using AI-based feedback tools to improve their writing skills. Slightly fewer than that (4%) do not use these tools.

Question 10: If yes, how helpful is AI feedback in improving your writing skills (grammar, coherence, vocabulary)?

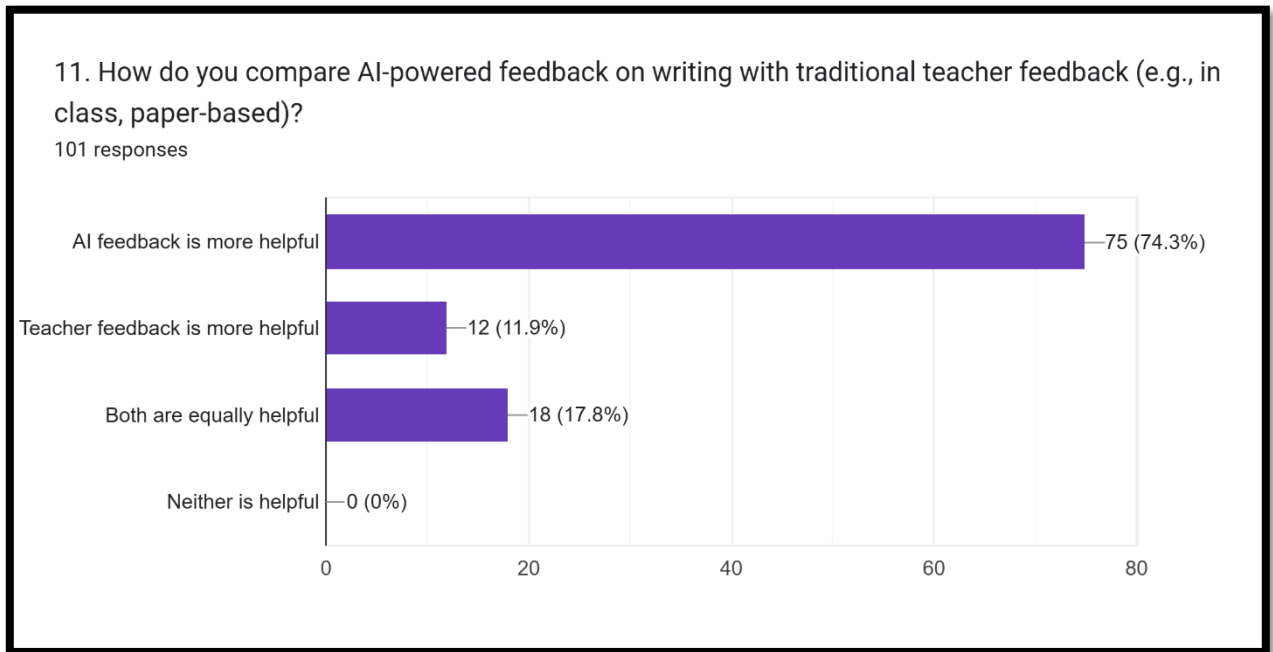
Figure 3.10

Use of AI Feedback Tools for Writing Skills Improvement



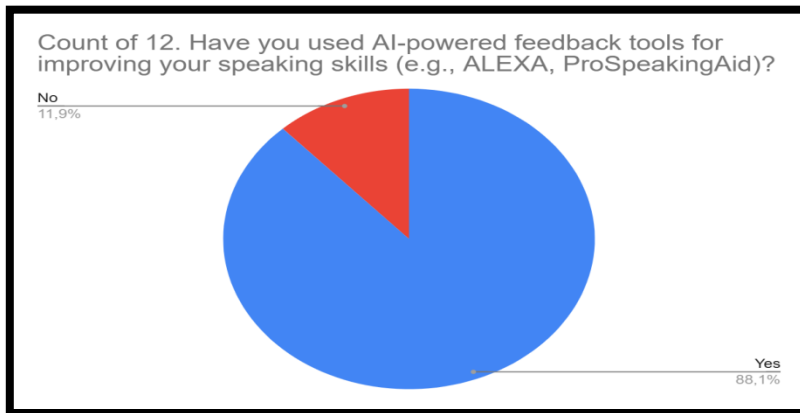
It is observed that 82% of the respondents find AI feedback in improving their writing skills extremely helpful, 13% say that it is moderately helpful, following by 3% that think it is slightly helpful and only 2% that disagree with the formers.

Question 11: How do you compare AI-powered feedback on writing with traditional teacher feedback (e.g., in class, paper-based)?

Figure 3.11**AI Feedback vs Traditional Feedback on Writing: Learner Perceptions**

The graph illustrates that 75% of the respondents tend to value AI feedback rather than teachers' feedback which is preferred by only 12% of the participants, the rest 18 % of students say that they are both equally helpful.

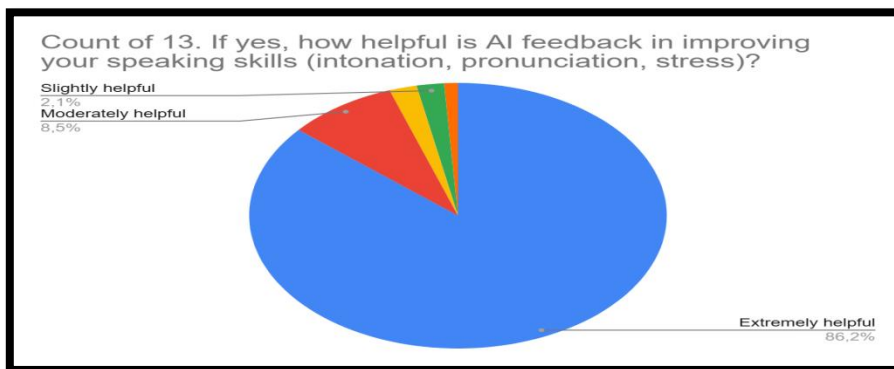
Question 12: Have you used AI-powered feedback tools for improving your speaking skills (e.g., ALEXA, ProSpeakingAid)?

Figure 3.12**Use of AI Feedback Tools for Speaking Skills Improvement**

101 responses

The pie chart overhead shows that 88% of students use AI-powered feedback tools for improving their speaking skills and only 12 % of them did not.

Question 13: If yes, how helpful is AI feedback in improving your speaking skills (intonation, pronunciation, stress)?

Figure 3. 13**Helpfulness of AI Feedback on Speaking Skills**

94 responses

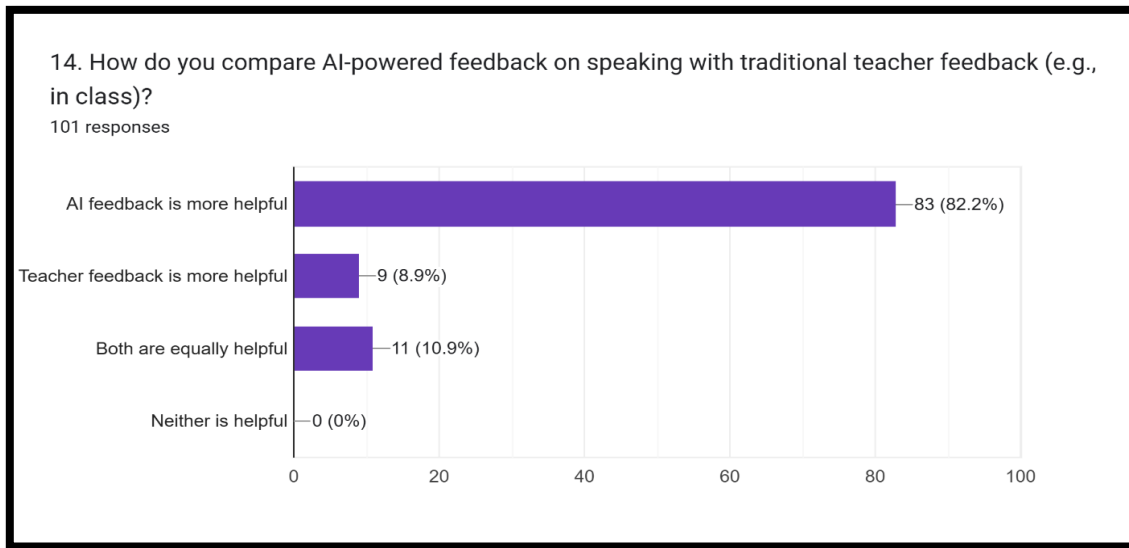
It is observed that 94 students from 101 replied to this question. The findings revealed that 86% of the respondents found AI feedback extremely helpful in improving their

speaking skills, 8.5% of them said that the feedback was moderately helpful, followed by 2% of them who thought that it was slightly helpful.

Question 14: How do you compare AI-powered feedback on speaking with traditional teacher feedback (e.g., in class)?

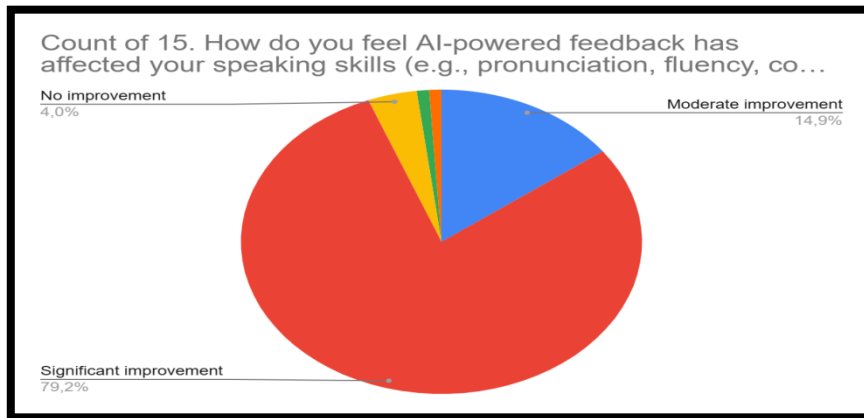
Figure 3.14

AI Feedback Vs Traditional Feedback on Speaking: Learner Perceptions



The graph above illustrates that 83% of the respondents tend to value AI feedback rather than teachers' feedback which is preferred by only 9% of the participants, the rest 11 % of them say that they are both equally helpful.

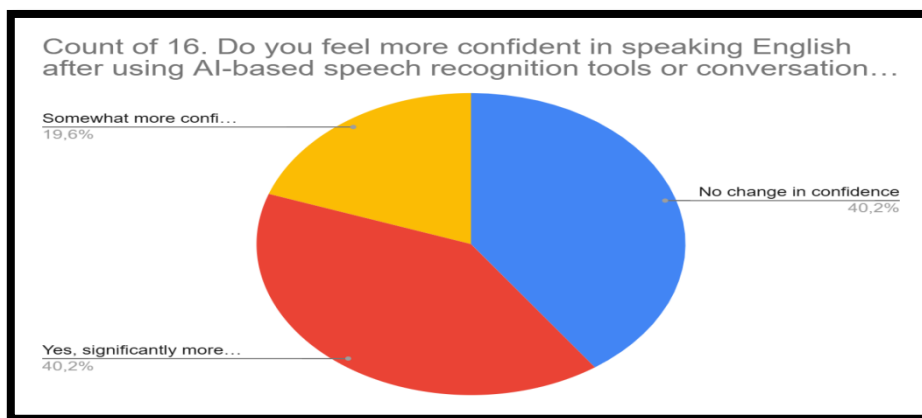
Question 15: How do you feel AI-powered feedback has affected your speaking skills (e.g., pronunciation, fluency, confidence)?

Figure 3.15**Impact of AI Feedback on Speaking Skills**

101 responses

It is shown in figure 3.15 that 79% of the responses say that AI-powered feedback affected their speaking skills by giving them significant improvements, followed by 15 % of them that describes it as moderate and 4% of the students state that there was no improvement.

Question 16: Do you feel more confident in speaking English after using AI-based speech recognition tools or conversational AI?

Figure 3.16**Confidence in Speaking English after Using AI-Based Speech Recognition Tools**

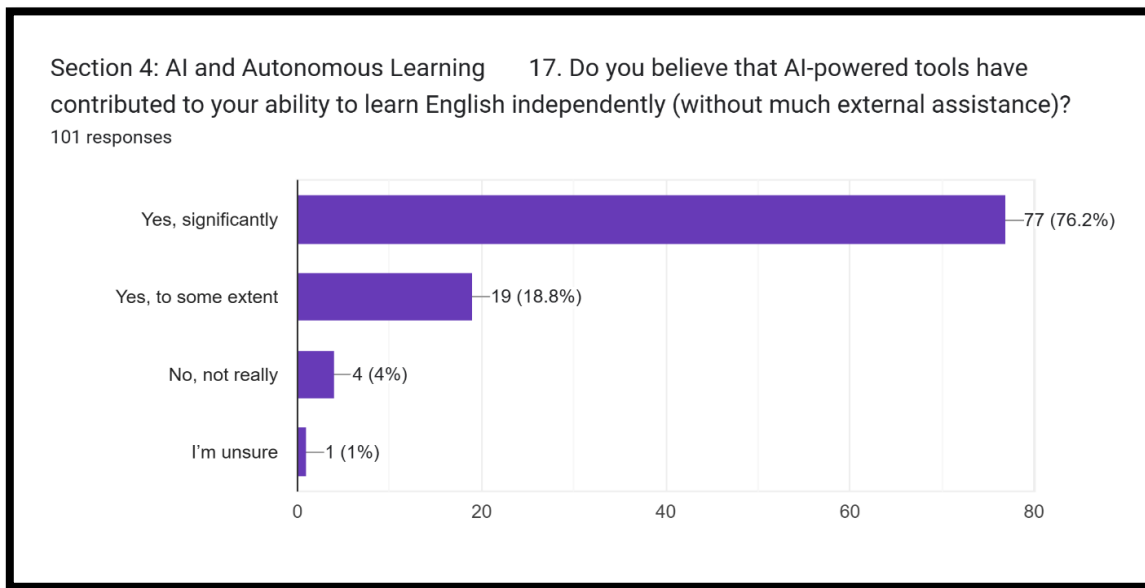
101 responses

It is noticed that 40% of respondents said that they had a significantly more confidence in speaking English after using AI-based recognition tools or conversational AI and 40% noticed no change, 20% of them stated that they somewhat had confidence.

Question 17: Do you believe that AI-powered tools have contributed to your ability to learn English independently (without much external assistance)?

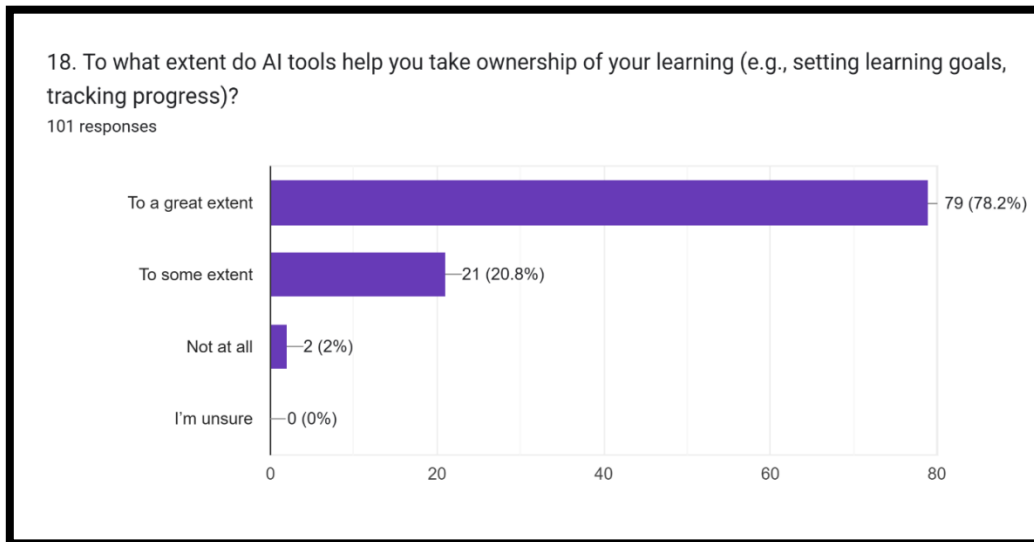
Figure 3. 17

AI Tools and Independent English Learning: Perceived Contribution



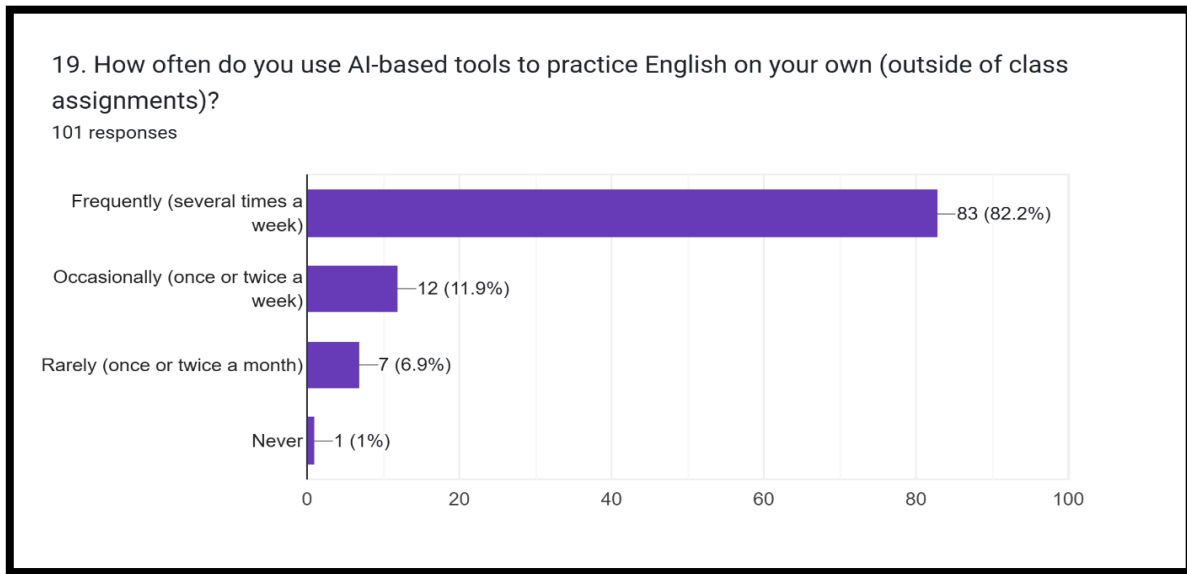
The graph appears to be showing that a great portion of respondents (77%) believe that AI-powered tools have contributed to their ability to learn English independently, 19% of them affirm that they contribute to some extent, followed by 4% of them who disagree about the contribution and 1% of them are not sure.

Question 18: To what extent do AI tools help you take ownership of your learning (e.g., setting learning goals, tracking progress)?

Figure 3.18**AI Tools and Ownership of Learning: Perceived Impact**

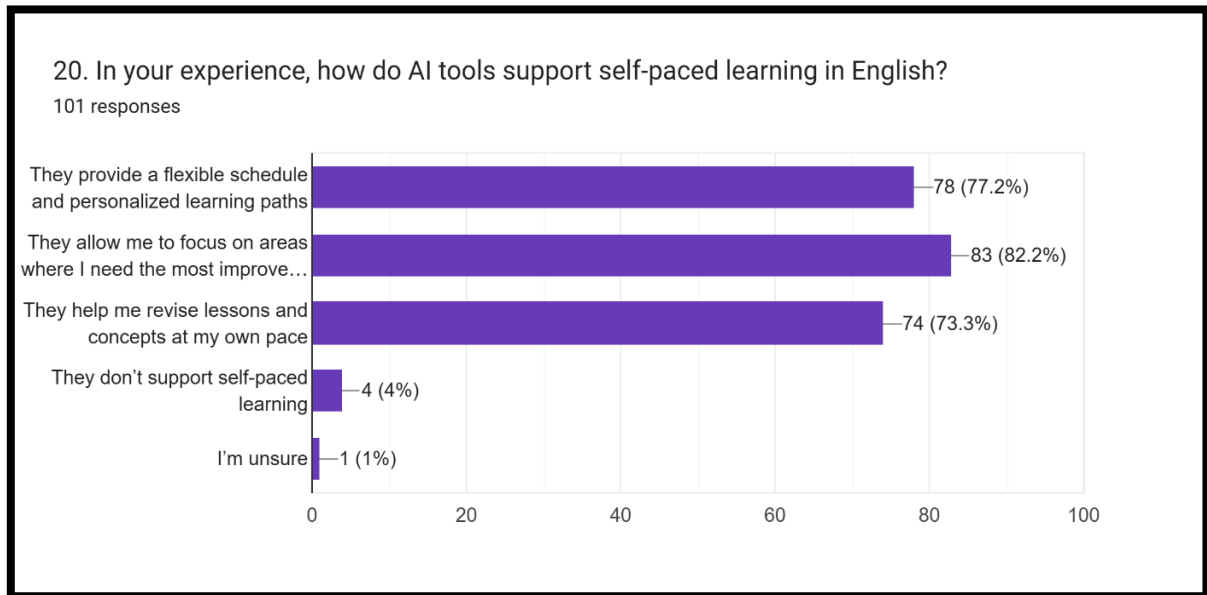
The graph above demonstrates that a significant rate (78.2%) of participants thinks that AI tools help them take ownership of their learning to a great extent ,and 21% of them who think so to some extent , trailed by (2%) who does not think so.

Question 19: How often do you use AI-based tools to practice English on your own (outside of class assignments)?

Figure 3.19**Frequency of Using AI Tools for Self-Paced English Learning**

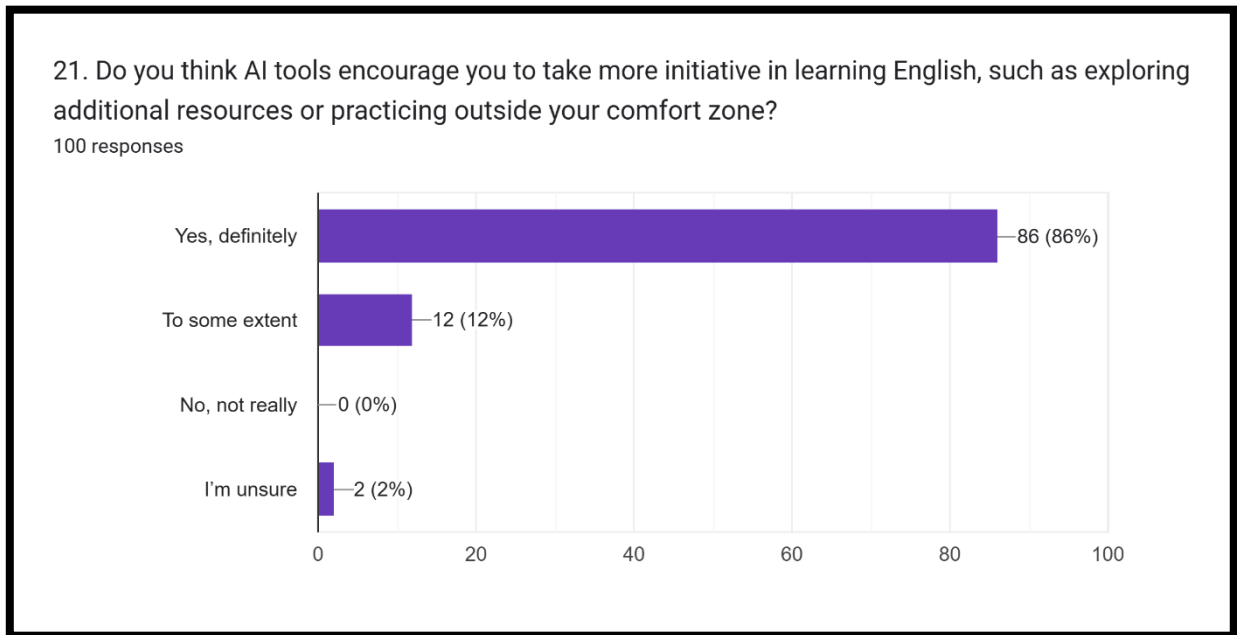
According to the results obtained, it is shown that a good rate of 83% of the participants use AI-based tools to practice English on their own frequently, however, 12% of them use it occasionally, an other percentage of 7% rarely do, and only 01% of the respondents never use them.

Question 20: In your experience, how do AI tools support self-paced learning in English?

Figure 3.20**AI Tools and Self-Paced English Learning: Perceived Support**

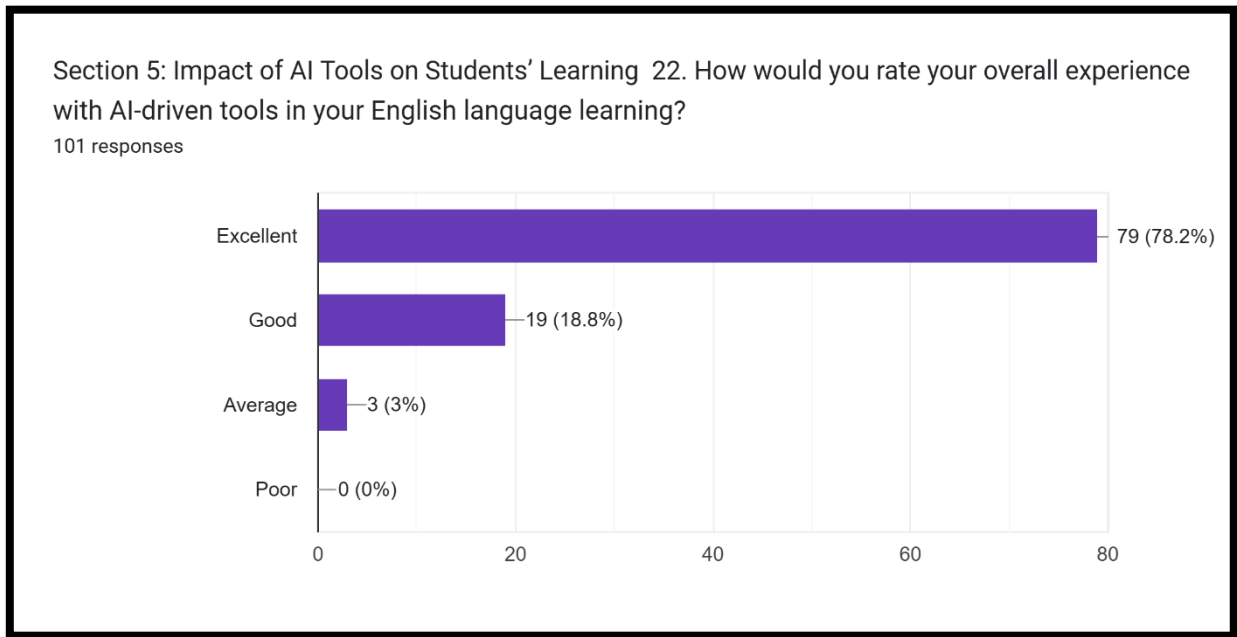
The graph above indicates that a high percentage (83%) of participants say that AI tools support self-paced learning in English by allowing them to focus on areas where they need the most improvement, followed by an important percentage of (78%) who say that they support by proving a flexible schedule and personalized learning paths. Besides, 74% of the students say that AI tools help them revise lessons and concepts at their own pace, in addition to 04% of the population who disagree, whereas only (01%) of them are unsure.

Question 21: Do you think AI tools encourage you to take more initiative in learning English, such as exploring additional resources or practicing outside your comfort zone?

Figure 3.21**AI Tools Encouragement in Taking Initiative in Learning English**

The graph overhead outlines that an interesting rate (86%) of participants often feel that AI tools encourage them to take more initiative in learning English, such as exploring additional resources or practicing outside your comfort zone, other (12%) of them think that they do to some extent, in opposition to 02% of them who are unsure.

Question 22: How would you rate your overall experience with AI-driven tools in your English language learning?

Figure 3.22**Impact of AI Tools on Overall English Language Learning Experience**

It is shown in the graph directly above that the highest percentage 79% of the participants rate their overall experience with AI-driven tools in their English language learning as excellent, while 19% of them said that their experience is good, followed by 3% who rate it as average, and 0% rate it as poor.

Question 23: What advice would you suggest to make AI tools more effective in enhancing your English language learning?

The results revealed some suggestions for the effectiveness of AI tools in enhancing students' English language learning, summarized in the following table:

Table 3.2**Participants' Suggestions for Enhancing the Use of AI Tools in English Learning**

Participants	Answer
01	Students should select their needs to know exactly what AI tool is helpful for them.
02	Students should use AI tools in purpose and not randomly. They should use them to focus on areas where they need improvement not to replace their efforts.
03	AI language learning apps keep them engaged while parenting. They squeeze in lessons during naptime or playtime. Consistency, patience and self-motivation are crucial. They ought to join online language groups for support.
04	It is very good as it is
05	They suggest to make them free
06	AI should be used wisely
07	Learning English through AI tools has revitalized their retirement. Online resources like BBC Learning English and TED Talks provide engaging content. They set realistic goals, celebrate small victories and explore various accents.
08	They like it as it is
09	AI tools that focus on speech recognition can help learners to improve their pronunciation comparing to native speakers. AI can generate reading materials, exercises, quizzes, and even stories tailored to the learners' interests, making learning more engaging and relevant. AI tools should provide instant corrections and suggestions for grammar, pronunciation, and vocabulary use. This helps learners to correct mistakes immediately and understand the reasoning behind the correction.

10	It is advisable to combine AI-based learning with traditional methods to ensure a balanced and effective approach.
11	It needs more improvements
12	Students had better not depend on them totally.
13	They have found AI language tools invaluable while traveling. Apps like iTranslate and TripLingo help them navigate foreign languages. They should practice before trips, focus on key phrases and immerse themselves in local culture.
14	They should focus more on speaking and writing to make themselves as a real teacher.
15	Maybe AI tools must find other essay ways to enhancing the learning of English language in order to be suitable to learners.
16	Some free apps (Duolingo and AI tools) use a lot of advertisements and that contributes in losing students' focus on learning so they should pay for premium version without ads.
17	There should be a limit to these tools. Students had better try to comprehend and focus.
18	The use of AI tools that have access to podcasts, videos, and audiobook as listening to native speakers helps improve students' accent. Moreover, they should use AI platforms that can adapt to their learning pace. Also, chatbots can provide an immense help to practice conversational skills.
19	Not relying too much on them and be autonomous
20	To make AI tools more effective for English learning: 1. Set Clear Goals: Focus on specific skills like grammar, vocabulary, or speaking. 2. Use AI Diversely: Practice with chatbots, writing checkers, and pronunciation apps. 3. Customize Learning: Tailor AI to your level and interests. 4. Practice Regularly: Dedicate daily time to conversations, writing, or listening. 5. Track Progress: Use tools that provide feedback and review mistakes.

21	AI needs more language recognizing improvements.
22	More development and it will happen eventually.
23	Students should combine AI tools with regular practice and real-life conversations for better English skills.
24	Artificial intelligence is the only thing that can help students develop their English language for free and at home.
25	Students think the AI tools are more effective when they use them as a summary or push to further research. Thus, they would prefer to work with AI tools with references for more credibility.
26	Language learning apps like Memrise and Anki simplify vocabulary building. Create flashcards, play language games and engage in conversations. Immerse one in English media – movies, TV shows, and books – to reinforce learning."
27	Using speaking and listening skills with AI (communication with AI in different topics)
28	AI-powered language tools enhanced professional communication. They utilize LinkedIn Learning, language learning podcasts and AI-driven writing assistants. Focus on clarity, concision and context to effectively convey ideas.
29	AI tools should be used wisely knowing what to take in order not to be fully dependent on them.
30	If all AI tools are free is better.

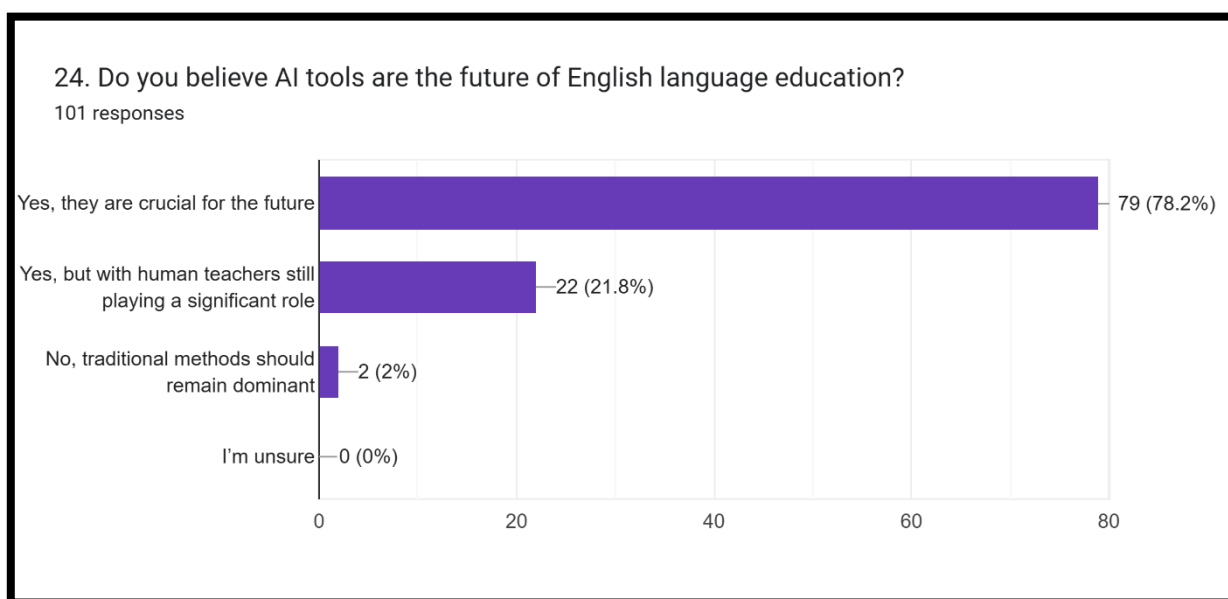
To make AI tools more effective in enhancing your English language learning the respondents point that AI technology can be a valuable asset for language learners if properly utilized and combined with traditional teaching. Learners must set specific goals, practice regularly, and employ AI resources that provide feedback and track progress in order to maximize their use. AI-based learning must be supplemented with real conversation and practice to solidify learning and avoid over-reliance on computers. Other students suggest that AI tools should be made more easily accessible,

with cheaper or free versions, and improved language recognition. Using AI tools responsibly, in combination with traditional methods, students can enhance their language skills, i.e., speaking, listening, reading, and writing.

Question 24: Do you believe AI tools are the future of English language education?

Figure 3.23

AI Tools and the Future of English Education: Students Perspectives



From the graph, it is shown that most of the students (79%) believe that AI tools are crucial for the future of English language education, whereas (22 %) of them consider that it would be but only with a human teacher cooperation, however; only (02%) of them believe only on traditional methods and that they should remain dominant.

3.3. Discussion and Interpretation of the Main Results

This study has the purpose of investigating the use of AI tools by EFL students in developing writing competency and speaking fluency at Tlemcen and Oran

universities. For this sake, the questionnaire was the instrument used to collect information from students and the interview was the instrument to gather data from teachers to attest to the proposed hypotheses. After data analysis, the most significant findings are the following:

3.3.1. Teachers' Interview

The results indicate that all teachers agree on the importance of contributing AI tools into learning English. The findings show also that AI tools can be a valuable addition to language learning and help personalize learning activities for students, adapting to the level of each one, and providing tailored exercises and challenges. The personalization led to significant improvement in students' writing and speaking skills, particularly in grammar accuracy and fluency.

But the instructors also raised several issues with the application of AI tools. One of the key issues brought up was accessibility, wherein all the students may not have the same level of access to equipment, internet, or computer knowledge. Some students were also over-reliant on AI feedback without applying critical evaluation of their mistakes, which can lead to passive learning. Additionally, AI tools may not have cultural expressions and nuances imparted by human teachers, and therefore balancing AI-led learning with traditional teaching methods would be essential.

Teachers suggested enhancing the efficiency of AI tools through injecting local context in the form of situations, proverbs, and topics that are prevalent in Algerian society and everyday life. They also suggested incorporating interactive elements like gamification, quizzes, and group projects to make learning interesting and enjoyable. Moreover, AI software needs to provide instant feedback and responses to aid the process of learning.

By addressing these challenges and putting these suggestions into practice, instructors can unlock the potential of AI to improve language learning success in Algerian universities. Lastly, educators believed that AI tools should be employed to

complement the traditional pedagogy, rather than substitute it. Although AI can provide customized learning paths and instant feedback, human teachers play a key role in establishing critical thinking, creativity, and cultural sensitization. Through the balance of AI-based learning and traditional teaching methods, teachers can establish a more effective and interactive platform for language learning for students.

3.3.2. Students' Questionnaire

The analysis of the questionnaire reveals that the majority of students are aware of AI tools importance and it depicts that students are eager to apply AI-based tools in English language learning. Students found AI tools effective in individualizing learning, instant feedback and explanation, and improving writing and speaking skills. In addition, they appreciated the autonomy and confidence offered by AI tools for learning, enabling them to learn independently and monitor their own progress. Moreover, they believed that AI tools would have a significant role to play in English language teaching in the future, but others believed that they must be used alongside human teachers. To achieve maximum benefits from AI tools, students recommended using them pragmatically, creating clear objectives, and rehearsing regularly. They also recommended promoting the accessibility of AI tools and improving language recognition. Artificial intelligence-based software can be a good tool in the learning of the English language, facilitating the learning of languages, promoting autonomy and confidence among students by providing them with an individualized and supported learning experience.

To sum up, in the beginning of this work, three hypotheses were proposed; the first hypothesis denotes that AI tools can provide a personalized learning experience thus both teachers and students defined it, showed its significance and compared it to traditional learning. This hypothesis is proved after data collected were analyzed because most participants while answering the questionnaire indicated that they used AI tools daily and they were very effective. Therefore students' personalized learning

experiences may be enhanced by AI-based tools, adaptive learning technology and natural language processing software can effectively boost engagement as well as retention, and both teachers and students see the potential benefits of incorporating AI-based technologies in English language teaching.

The second hypothesis proposed that AI-feedback leads to a number of improvements in both writing and speaking skills compared to traditional methods of feedback. After analyzing the answers of both students and teachers, it was shown that AI-feedback was seen to be effective in enhancing writing and speaking skills, students reported significant improvement in writing and speaking following the use of AI-powered feedback tools, and most students preferred AI-feedback to traditional teacher feedback, citing its immediacy, specificity, and helpfulness. So, the second hypothesis is approved.

The last hypothesis proposed that AI-based tools encouraged greater autonomy in learners by providing personalized content, instant feedback and self-paced learning opportunities that increased proficiency in English. After analyzing the answers of the students and the teachers, it revealed that AI-based tools promoted learner autonomy by providing personalized content, instant feedback, and independent learning. Plus, students noted greater confidence and skill in English due to the use of AI-based tools, and the majority of students liked being able to learn at their own pace and be in charge of their own learning. As a result, the third hypothesis is confirmed

3.4. Suggestions and Recommendations

For Teachers

- They should incorporate AI-driven personalized learning systems, adaptive learning software, and natural language processing programs into their teaching arsenal to support students' learning outcomes.

- They ought to employ AI tools to complement traditional teaching, rather than substitute it.
- Teachers should periodically review students' data and feedback from AI tools to ascertain areas where the students need additional assistance.
- They ought to involve students to develop core digital competencies, such as online research, critical thinking, and digital communication.

For Students

- They should utilize AI-assisted tools to take charge of their own learning, setting goals and tracking progress.
- Students should regularly practice English language skills such as writing, speaking, and listening through AI-powered tools.
- They ought to use AI feedback to understand where to enhance and track improvement over a time span.
- They should get accustomed to navigating online resources, goal-setting, and effective time management.

For Administration

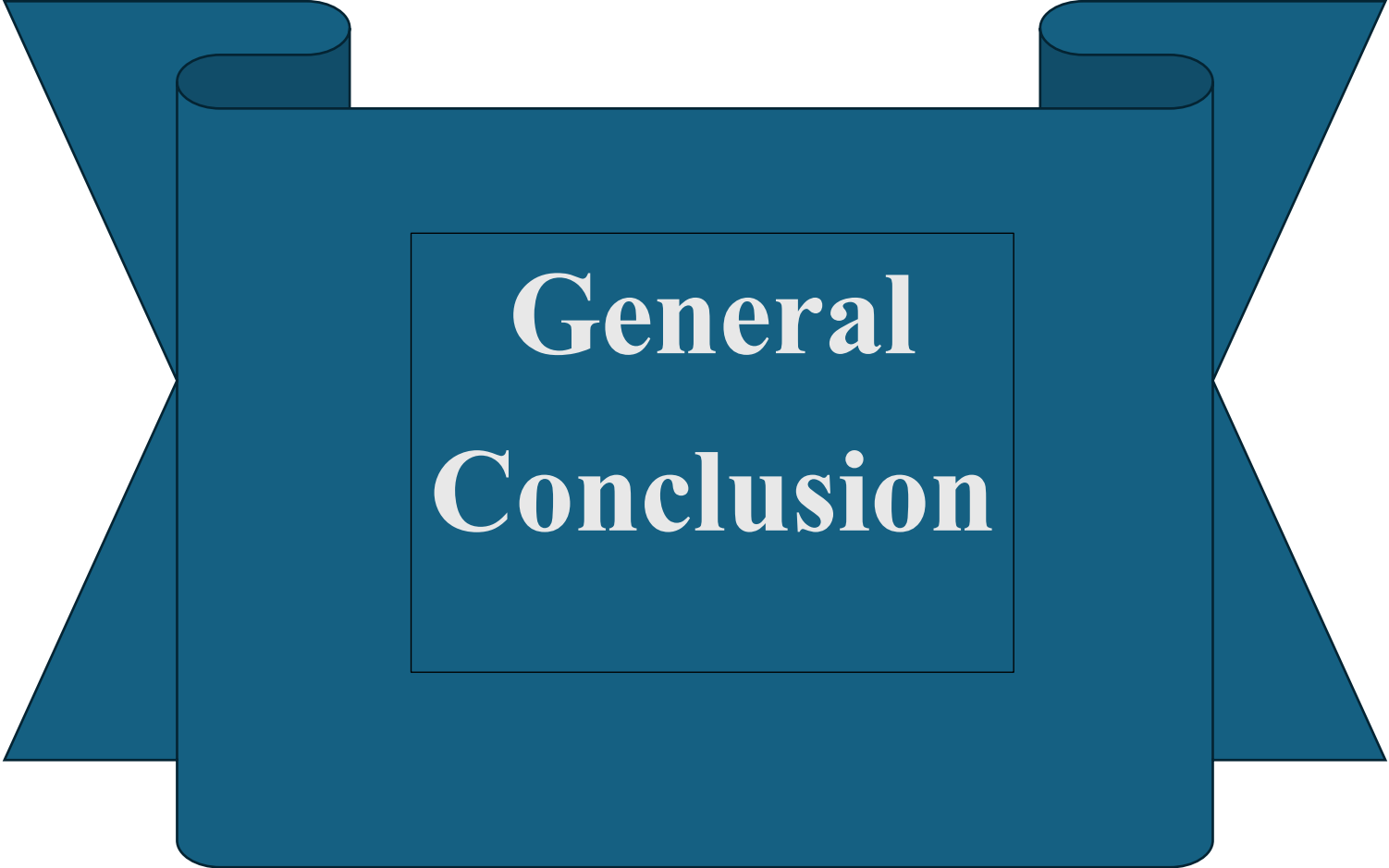
- It should provide teachers and students with access to AI-based personalized learning environments, adaptive learning software, and natural language processing tools.
- The administration should provide teachers with professional development training in using AI-powered tools effectively in pedagogy.
- It ought to ensure the school infrastructure is capable of supporting the use of AI-powered tools, like stable internet connections and devices.
- It should monitor and evaluate the effectiveness of AI tools in enhancing students' learning outcomes and correct accordingly.

Additional Recommendations

- Facilitating collaboration among administrators, teachers, and students to coordinate AI-enabled tools for use and in support of student learning outcomes.
- Ensuring equal access to AI tools and technology for all students regardless of socio-economic status or ability.
- Reviewing periodically the effectiveness of AI technology and refine it so that it remains responsive to the needs of students and teachers.

3.5. Conclusion

To conclude, this chapter deals with the obtained results from both Master 1 students' questionnaire and EFL teachers' interview. It presents analysis of the gathered data which have revealed that EFL students of the Department of English at Tlemcen and Oran universities rely a lot on AI tools in developing their writing and speaking skills. After the interpretation of the main results, the hypotheses that were formulated have been confirmed. Finally, the researchers proposed some suggestions and recommendations that can be used by both EFL students and their teachers to promote the use of AI tools to achieve a successful teaching and learning process



General Conclusion

The present research is an attempt to investigate the use of artificial intelligence in English language learning by integrating transformative tools for personalized learning experience. Furthermore, it seeks to explore the benefits that AI tools could incorporate into crafting a personalized learning experience, exploiting AI feedback and validating learner's autonomy. The core end of this research is to look at further suggestions that may help students and teachers to use AI tools the best way possible.

Therefore, for achieving the research destination the first chapter was devoted to exploring an overview An Overview on AI in education, language learning, personalized learning, AI feedback, and learner autonomy. The chapter covers the theoretical foundations, pros, and cons of integrating AI in education, or more specifically, English language instruction and learning. The chapter criticizes various AI-based tools like Duolingo and Grammarly and the effects of personalized learning and AI feedback on learner engagement and performance. It further mentions the contribution of AI in developing learner autonomy and self-regulation, and hints at the potential of AI in transforming English language teaching and learning, and provides the foundation for the research questions and objectives.

Hence, the second chapter was devoted to the methodological part of the study in which a teachers' interview has been conducted and a students' questionnaire has been administered to Master 1 students as data collection tools for this research to either confirming or rejecting the validity of the research questions and hypotheses and for exploring the use of AI tools in learning English. The research carried out a descriptive study involving 101 Master 1 students and 04 teachers and followed a mixed-methods approach by taking statistics and describing and interpreting the obtained results.

The findings which were presented and interpreted in chapter three revealed a confirmation of the research hypotheses. First, AI-driven tools can be incorporated into English language teaching to enhance personalized learning experience through the use

of adaptive learning platforms and natural language processing applications that can be used to improve engagement and retention.

Moreover, it confirmed the second research hypothesis that claims that motivating students, creating a friendly environment and a supportive learning atmosphere are possible solutions to overcome speaking difficulties and assist students in developing speaking fluency. AI-feedback leads to a number of improvements in both writing and speaking skills compared to traditional methods of feedback.

In addition, it confirmed the third research hypothesis that ensures that AI-based tools encourage greater autonomy in learners by providing personalized content, instant feedback and self-paced learning opportunities that increase proficiency in English.

Based on these results and in order to help promote the use of AI tools by students for learning English the most effectively, several suggestions and recommendations were proposed to students, teachers and administration. Evidence suggests that teachers, students, and administrators can work together to maximize the potential of AI-based tools in ensuring improved results in learning English. The teachers must include AI tools, ensure technology-human interaction harmony, and monitor student performance, while students must take ownership of their learning, practice continuously, and offer feedback. Administrators must make investments in AI tools, provide training to teachers, and set infrastructure in place in order to enable their adoption. In addition, collaboration should be promoted, equity and access overcome, and AI-assisted tool use continuously assessed and optimized to ensure effective and advantageous use. Hopefully, the proposed recommendations will contribute to the improvement of English teaching and learning more precisely at Tlemcen University.

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Appendix A: Teachers' Interview

This interview aims to gather insights regarding the use of Artificial Intelligence (AI) tools in English Language Teaching (ELT). The purpose of this research is to explore how AI-driven tools can enhance personalized learning, impact learners' writing and speaking skills, and foster autonomous learning. Your answers are confidential.

-Q01: What is your experience with the application of AI-powered tools in teaching English language?

-Q02: How useful do you find AI tools in individualizing learning experiences for learners?

-Q03: Did you find significant improvement in students' writing or oral skills through AI-based feedback?

-Q04: Do AI tools encourage learners' autonomy, in your view? If yes, how?

-Q05: What are the difficulties you've encountered when implementing AI tools as part of your instruction?

-Q06: Do you believe that AI tools can substitute the traditional teaching methods completely in English language teaching?

-Q07: What else do you suggest should be added or work differently in AI tools to enable more effective English language learning?

Appendix B

Students' Questionnaire

Dear Participants,

This questionnaire aims to gather insights regarding the use of Artificial Intelligence (AI) tools in English Language Teaching (ELT). The purpose of this research is to explore how AI-driven tools can enhance personalized learning, impact learners' writing and speaking skills, and foster autonomous learning in Master One students. Your responses will provide valuable information to help understand the effectiveness of AI applications in enhancing the learning experience.

Please answer the following questions based on your experiences and observations in your English language learning journey. Your responses will remain confidential and will only be used for research purposes.

Section 1: Students' Profile

1. What is your age group?

- ☐ 18-24
- ☐ 25-30
- ☐ 31-35
- ☐ 36 and above

2. How do you describe your proficiency level in English?

- ☐ Beginner
- ☐ Intermediate
- ☐ Advanced
- ☐ Native Speaker

3. How long have you been learning English?

- ☐ Less than 1 year
- ☐ 1-3 years
- ☐ 4-6 years
- ☐ More than 6 years

Section 2: AI Integration in English Language Teaching

4. How often do you use AI-powered tools (e.g., adaptive learning platforms, language learning apps, chatbots) in your English language learning?

- ☐ Daily
- ☐ Weekly
- ☐ Occasionally
- ☐ Never

5. Which AI-driven tools do you use for learning English? (Select all that apply)

- ☐ Adaptive learning platforms (e.g., Duolingo, Quizlet)
- ☐ Writing assistants (e.g., Grammarly, Hemingway)
- ☐ Speech recognition apps (e.g., Google Speech-to-Text)
- ☐ Virtual tutors or AI chatbots (e.g., ChatGPT, Elsa Speak)
- ☐ Other (Please specify): _____

6. How effective do you think AI tools are in personalizing your learning experience?

- ☐ Very effective
- ☐ Somewhat effective
- ☐ Not effective
- ☐ I'm unsure

7. In your opinion, how can AI-driven tools enhance your learning in English? (Select all that apply)

- ☐ Provides personalized feedback
- ☐ Adapts to my individual learning pace

- ☐ Helps me with grammar and vocabulary development
- ☐ Provides instant correction and explanations
- ☐ Increases engagement and motivation
- ☐ Other (Please specify): _____

8. Do you feel that AI tools can cater to your specific learning needs and problems in English?

- ☐ Yes, AI tools help me address specific challenges
- ☐ Somewhat, but not entirely
- ☐ No, I don't feel AI tools cater to my needs
- ☐ I'm unsure

Section 3: Impact of AI-Powered Feedback on Writing and Speaking Skills

9. Have you used AI-powered feedback tools for improving your writing skills (e.g., Grammarly, ProWritingAid)?

- ☐ Yes
- ☐ No

10. If yes, how helpful is AI feedback in improving your writing skills (grammar, coherence, vocabulary)?

- ☐ Extremely helpful
- ☐ Moderately helpful
- ☐ Slightly helpful
- ☐ Not helpful at all

11. How do you compare AI-powered feedback on writing with traditional teacher feedback (e.g., in class, paper-based)?

- ☐ AI feedback is more helpful
- ☐ Teacher feedback is more helpful
- ☐ Both are equally helpful
- ☐ Neither is helpful

12. Have you used AI-powered feedback tools for improving your speaking skills (e.g., ALEXA, ProSpeakingAid)?

- ☐ Yes
- ☐ No

13. If yes, how helpful is AI feedback in improving your speaking skills (intonation, pronunciation, stress)?

- ☐ Extremely helpful
- ☐ Moderately helpful
- ☐ Slightly helpful
- ☐ Not helpful at all

14. How do you compare AI-powered feedback on speaking with traditional teacher feedback (e.g., in class)?

- ☐ AI feedback is more helpful
- ☐ Teacher feedback is more helpful
- ☐ Both are equally helpful
- ☐ Neither is helpful
-

15. How do you feel AI-powered feedback has affected your speaking skills (e.g., pronunciation, fluency, confidence)?

- ☐ Significant improvement
- ☐ Moderate improvement
- ☐ No improvement
- ☐ Negative impact

16. Do you feel more confident in speaking English after using AI-based speech recognition tools or conversational AI?

- ☐ Yes, significantly more confident
- ☐ Somewhat more confident
- ☐ No change in confidence

- ☐ Less confident
-

Section 4: AI and Autonomous Learning

17. Do you believe that AI-powered tools have contributed to your ability to learn English independently (without much external assistance)?

- ☐ Yes, significantly
- ☐ Yes, to some extent
- ☐ No, not really
- ☐ I'm unsure

18. To what extent do AI tools help you take ownership of your learning (e.g., setting learning goals, tracking progress)?

- ☐ To a great extent
- ☐ To some extent
- ☐ Not at all
- ☐ I'm unsure

19. How often do you use AI-based tools to practice English on your own (outside of class assignments)?

- ☐ Frequently (several times a week)
- ☐ Occasionally (once or twice a week)
- ☐ Rarely (once or twice a month)
- ☐ Never

20. In your experience, how do AI tools support self-paced learning in English?

- ☐ They provide a flexible schedule and personalized learning paths
- ☐ They allow me to focus on areas where I need the most improvement
- ☐ They help me revise lessons and concepts at my own pace
- ☐ They don't support self-paced learning
- ☐ I'm unsure

21. Do you think AI tools encourage you to take more initiative in learning English, such as exploring additional resources or practicing outside your comfort zone?

- ☐ Yes, definitely
 - ☐ To some extent
 - ☐ No, not really
 - ☐ I'm unsure
-

Section 5: Impact of AI Tools on Students' Learning

22. How would you rate your overall experience with AI-driven tools in your English language learning?

- ☐ Excellent
- ☐ Good
- ☐ Average
- ☐ Poor

23. What advice would you suggest to make AI tools more effective in enhancing your English language learning?

(Please write your suggestions below)

24. Do you believe AI tools are the future of English language education?

- ☐ Yes, they are crucial for the future
- ☐ Yes, but with human teachers still playing a significant role
- ☐ No, traditional methods should remain dominant
- ☐ I'm unsure

Thank you for taking your time to complete this questionnaire. Your responses will greatly contribute to understanding the role of AI in enhancing English language learning.