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Artificial Intelligence (AI) and Multilingualism: Investigating Language Perception Among University Students

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DECLARATION OF ORIGINALITY

This dissertation entitled “Artificial Intelligence (AI) and Multilingualism: Investigating Language Perception Among University Students.” to fulfill the academic requirement for Master’ degree in Language Science in Faculty of Letters and Languages, department of English of Abu Bekkr Belkaid University, Tlemcen. This research is a product of pure originality. This paper contains no plagiarism and is the result of self-investigation, except the materials previously published which is already referenced.

Ms. Nor Chaima Zendagui

DEDICATION

To me and mama,

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Great gratitude goes to my supervisor that taught me, shared his knowledge with me. Prof. Amine BELMEKKI have been a significant scholar in my path while writing this research. I am indebted for his expertise.

I am grateful to the board of examiners for reading and correcting this paper. The comments are appreciated.

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ABSTRACT

This research is based on the evolving domain of Artificial Intelligence (AI) in language learning. This study investigates the role of AI-powered tools in providing an adaptive, and personalized experience for the student to promote an academic learning environment. AI tools were examined to analyze the potential of AI instruction to individual learners' needs, increase accessibility, and promote autonomous learning. A triangulation approach was employed combining a questionnaire that was applied to highlight the trends of AI use in language learning. Semi-structured interviews to capture the main themes and document analysis to ensure the credibility of the findings of the interviews. The aim and objectives of this research were structured in a manner that facilitate the understanding of the findings' depth. The findings showed how AI influenced motivation by either enhancing it or reducing it. The challenges and limitations of AI in language learning were also highlighted and discussed, exploring the reliability and the accuracy of this digital tools which are valuable aid in modern language education. However; this research does not represent a standardized data as the conclusions were not generalizable.

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As broadly defined, language has been taught for years with traditional methods associated with reading, writing, and speaking solely in the target language to master it and start speaking native like. Linguistically speaking, language is a main means of communication, discussion, and thinking of philosophical, and scientific interests. The process of learning to speak is one of the most important things of early childhood, between the ages of three and five years (Spahiu & Cevik, 2013), and thusly the journey of thinking and speaking to develop begins, making the ability of utilizing a language always taught and never inherited from infancy to adulthood.

The exposure to AI technology in EFL learning could help develop language competencies in ways that never existed before with a meaningful input that leads to clearer differentiation between languages. Enriching language perception through sources, knowledge, collocation, and meaning disambiguation. A certain effect of AI that can provide almost ultimate motivation and satisfaction in learning foreign languages.

This research bolsters the understanding of using AI technology as a competency medium, while also broadening the scope of technology integration. Language assessment serves as a bridge between students' understanding and instructional approaches.

Similarly, social, bureaucratic, psychological, and technical approaches supply various challenges to the realization of substantial new experimental AI-Assisted language learning projects. An estimate of eighty languages that share an average of similarities (e.g., grammar, etc.), like French, Spanish, and Italian, could be learned with early AI learning tools.

The flexibility of the language is one of the most important aspects in making meaning and understanding the words, not just by their literal meaning but also by their contextual meanings.

The flexibility of the language is one of the most important aspects in making meaning and understanding the words, not just by their literal meaning but also by their contextual meanings. The cognitive bandwidth of the human learner can now be used more effectively, if not entirely automatized production, and that will furthermore explain the focus on creativity or higher-order communicative skills instead.

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By the late 1950s and early 1960s, Chomsky's break with behaviorisms led to the new revolution of a new concept; cognitive area within psychology and the rise of a new-generation linguistics that increasingly relied on formal analytical techniques. At the same time, there were great expectations in the formalist community that the analysis of natural language semantics could be largely or entirely automated. By the early 1970s, however, it had become apparent that the resources and computing technology required to carry out such tasks were still far off, acoustic phonemes' woes were becoming increasingly pronounced, and both governmental and private industry funding were rapidly diminishing.

The report concludes with a brief discussion regarding the many challenges and prospects that will determine whether AI applications will in fact revitalize interest in computational linguistics. Furthermore, in the early days of AI, a major part of AI research was founded on the five questions raised by influential works on Perceptron. However, research on computer vision is still far from reaching an equivalent sophistication to humans although some of these questions have started to be answered.

In fact, AI research is branching into new horizons such as fuzzy and rough sets, cellular neural networks, artificial life, artificial immune systems, hybrid intelligent systems, etc., because these approaches attempt to construct a theory of intellect based on a knowledge processing framework. A critical perspective on the recent developments of AI is the framework of activity in the tradition of Vygotsky. The framework consists of a series of principles shaping the joint system of mind, culture, and society.

The memory of AI is dominated by "neat" conceptualizations and hypotheses, and it is usually thought to begin with the invention of the digital computer. AI is thus primarily seen as a creative innovation in computer science, focusing on understanding the process of intelligence and providing an experimental test bed for several models of human cognitive processes.

Students find themselves focusing on the effectiveness in processing complex tasks such as reading and understanding science texts, and on strategies that may help the students cope with these challenges (Ha Woo & Choi, 2021). However, these technologies have an impact on students' multilingual perceptions and practices, mainly linguistic autonomy and code-switching.

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This study aims to examine and highlight the impact of AI-powered tools on cognitive language processing which would also highlights the understandable questions that include fears regarding the toxic nature of some information being further 'weaponized', or also how even understanding the basis of learning would necessitate an interdisciplinary team not being able to work together.

Moreover, use of these tools is particularly made to make sure that they are also shared with any other person, or else otherwise much of scientific output is distracted, or those functions are liable to be lost which are significant (Kannan & Munday, 2018). AI is expanding on many levels, exploring human evolution through the nuanced nature of the cognitive processes and abilities that include emotional intelligence which is one of the main sources to ease learning.

RQ1: Do AI- powered language tools have an impact on students' multilingual practices
H1: AI-powered language tools seem to influence students' multilingual practices by enhancing their ability to switch between languages effortlessly.
RQ2: How AI-powered language tools affect students' multilingual language perception?
H2: AI-powered language tools may impact students' multilingual language perception by enhancing accessibility and comprehension of multiple languages; however, they may also reduce cognitive engagement by automating linguistic processing, potentially weakening critical thinking, problem solving skills, and active language learning.
RQ3: What is affected when multilingual students learn through empathy that isn't human?

H3: AI-powered language tools, by generating empathy tailored to students' learning needs, may either enhance students' reliance on AI for emotional satisfaction or diminish their ability for human interaction.

While examining the various impacts of AI on learners, this research will rely on a questionnaire, semi-structured interviews, and document analysis to gather reliable data from students who actively engage with AI in the language learning process. However, the contributions of this research will not highlight every aspect of this topic and it has several limitations that specify on third year students, master one, and master two students, which may not represent all multilingual learners, furthermore, the data reported will solely reflect the participants' personal experiences, which may introduce biases or inaccuracies due to its subjectivity.

Chapter One: AI and Multilingualism: *Theoretical Framework*

Chapter One AI and Multilingualism: Theoretical Framework

1.1 Introduction

Artificial Intelligence (AI) has become a pivotal part of human evolution; language learning is no exception. AI is delivering new avenues, systems and mechanisms for individuals to help them in tasks that would have taken longer time before. For, EFL university students to interface with multiple languages, AI-powered tools like ChatGPT, Grammarly, and Google Translate have the potential to significantly impact multilingual practices.

The present chapter investigates how EFL students at the university of Tlemcen are increasingly using these tools that present both opportunities and challenges in their studies. The growth of AI-powered languages tools appears to promote a heavy reliance on these technologies among EFL university students, as they facilitate and ease both language comprehension and production. However, this reliance that could be heavy at times raises important questions regarding the impact of these technologies on students' multilingual perceptions and practices, particularly concerning linguistic autonomy and code-switching.

This research investigates how AI tools shape EFL license-level students' engagement with multiple languages at the University of Tlemcen.

To investigate the impact of AI tools on language learning outcomes and determine whether they help or impede language proficiency, particularly in academic settings this chapter developed an exploratory theoretical framework examining the ideas that support a nuanced understanding of the mediating role of these tools. This study builds upon foundational theories from technology, language learning, the cognitive pedagogy, and multilingualism to analyze how AI tools shape student involvement with multiple languages. A range of theories explain how multilinguals dynamically use their linguistic resources to interact with the language, and whether AI tools support or restrict the flexibility of this dynamic.

Sociocultural Theory (Vygotsky, 1978) emphasizes the role of tools to mediate learning languages, the principles of this theory can be extended to understand the role of AI in learning and development, since AI is a modern cultural tool that shapes how people think, learn, and solve problems.

Translanguaging Theory (García & Li Wei, 2014), by applying this theory to study AI-powered language tools, this research interprets how the dynamic between EFL university students and multiple languages works, and whether the AI tools support or restrict these students' linguistic autonomy and flexibility.

Moreover, Affordance Theory (Gibson, 1979) refers to the perceived and actual opportunities that tools provide for learning, communication, and interaction. Additionally, Self-Determination Theory (Deci & Ryan, 2000) which examines the broader cognitive needs for autonomy, competence, and relatedness.

1.2. Definition of Key Terms

This section aims to elucidate and discusses the main terms often explored in the research concept. By investigating the underlying mechanisms of the key terms; this study endeavors to contribute to the topic.

1.2.1 Artificial Intelligence

Artificial Intelligence (AI), Alan Turing, the "father of computer" proposed the Turing Test in 1950, which refers to the stimulation of human intelligence, allowing machines to perform tasks that require human-like thinking and behavior. Researchers have embarked on the arduous road of trying to make machines "think" like humans. From promoting FORTRAN I, LISP and adequate computing facilities in the 1970s, to challenges from 2010 to 2015, like how to locate and orientate a Trojan war chariot in the Iliad scene, AI has been at the forefront of research and debate (Zhang,2023). That seems likely in the coming years. Perhaps machines with human-like cognitive functions will be commonplace.

In anticipation of a smoother journey, and bearing in mind the words Rabindranath Tagore, it seems apposite to consider how to understand this comprehensive field, and how best to develop it.

1.2.2. Multilingualism

A phenomenon that can be described regarding the conceptualization and trajectories, these two-dimensional understanding of multilingualism comprises the knowledge sorted into the brain of language.

The expansive movement of peoples, understandings, ideas, commodities, and messages in the contemporary world has rendered the concept of multilingualism more and more problematic, seen both from the perspective of language learners and educators, as well as from the perspective of monolingual speakers of a particular language habitus. (Scarino, 2016) particularly underscore the increased ambivalence about multilingualism in countries where English has acquired dominant status, and where education systems have attempted to standardize English and disregard other languages because of pursuing equitable access to English-based curricula.

1.2.3. Code Switching in Multilingual Contexts

In linguistics, code-switching (CS) is the use of two or more languages or language varieties in speech or writing or while doing both within a single text. Stated otherwise, code-switching is the occurrence of a change in the language or variety used while a text is being composed, or of a change in the language or variety witnessed within the same discourse beyond the focus on language understanding/input task or code-switched sentence completion bifurcation into translation and understanding tasks, a remedy is used as a sequence-to-sequence model.

1.2.4. Cognitive and Social Functions

AI is a rapidly expanding field with potential impacts on students' autonomy, course content, teaching strategies and modes of assessment in higher education. This could ameliorate the linguistic challenges multilingual students face when studying in a second language.

Students can use CS as a cognitive resource to reveal their underlying cognitive processing. The training approach involving bilingual professional teach needs to be redesigned accordingly. Results may raise the necessity of conducting further related studies, while its implications are particularly valuable for enhancing students' cognitive functions when learning English or other subjects using English as a lingua Franca. On the other hand, CS can be employed to symbolize the need for instrumental motivation and students' preferences for communication methods, and it can be viewed as a means of various interpersonal relationships.

Assistive Intelligence System (AIS) using CS should be widely employed for its incentive and harmonious effects on interactions between the educator and the learner, or among learners. However, considering the motives and social functions of interlocutors, cultural disparities can easily occur when CS is employed. AIS equipped with encoding and decoding functions for CS is recommended, especially referring to the assistive functions for teachers, which serves to ensure that the interactive course is significantly efficient.

1.3. Theoretical Framework

This section provides an in-depth exploration of the intricacies that highlights the research. Through comprehensive investigation of the study, seeking a meaningful contribution to the existing knowledge in the field.

1.3.1. Sociocultural Theory

Lev Vygotsky (1978), a notable Russian psychologist and the pioneer of sociocultural theory, investigated and found that human mental abilities are determined by social and cultural interactions. His perspective and while it does not directly address the impact of AI- powered tools, it still provides a useful framework for understanding how AI tools mediate language learning. Vygotsky argued that "every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological)" (p. 57). This sheds light upon the importance of social interaction in the internalization which refers to the transformation of external social interactions into internal mental processes, implicating the involvement of moving an "inter-psychological" understanding where the AI tool guides the interaction to an "intra-psychological" to understand where the learner can produce fluent speech.

Expanding on the idea of internalization more, this is a psychological concept where language skills are internalized, taking EFL students as an example, they use AI tools to engage in social interactions and internalize external knowledge and skills, and this process plays a crucial role in the cognitive process of integrating linguistic autonomy. Additionally, repeated use of AI-powered chatbots for conversational practice can help students internalize sentence structures and vocabulary, leading to improved speaking fluency. According to Vygotsky in his work, he defines internalization as a repeated process of language perception.

By communicating and engaging in conversations to reinforce linguistic patterns to improve the learner's ability of using the language without conscious effort, AI-powered tools are facilitating this process, as previously mentioned, learners can use AI chatbots nowadays to communicate. In simpler terms, internalization is to adopt something from the outside world and put it as interior. Fundamentally, the essence of sociocultural theory is for mentoring where the physical tangible and the symbolic intangible tools are mediators between individuals and their environments for interaction purposes. Overtime, this process becomes a cultural transmission.

Taking AI tools in context such as language learning apps, grammar checkers, online AI courses and dictionaries, they are modern cultural tools that mediate learning. For example, a student using an AI-powered translation app to understand a complex English or any other foreign language sentence is engaging in a mediated process of sense-making, here, the AI-powered app is an external object that plays as a physical mediator. As the student becomes more proficient, they start to understand the complex sentences and translate it on their own, which is at this point the role of symbolic mediator, without the need of external objects. And throughout the time, it becomes part of the individual's mental process. Furthermore, AI tools like the transition app can influence code-switching practices by providing students regular practice with instant translations, grammatical corrections, and immediate feedback, allowing them to seamlessly integrate their different languages in their learning process. "Language learning is a mediated process, where tools such as technology can play a crucial role" Lantolf, J. P. (2000).

Sociocultural theory and second language learning. Oxford University Press. As emphasized here, Lantolf stresses on the importance of the mediated process and how it is not about using tools, but about how these tools reflect the learner's cognitive processes, meaning that technology should play a crucial role integrated into learning activities, aligning solely with the specific goals and needs of the learners, taking into account the cultural context. For a better grasp on how AI tools guide learner's progress and growth, it is essential to consider the Zone of Proximal Development (ZPD), one of the key concepts in Vygotsky's theory, and a range of tasks for the learner to perform in order to grasp a language and yet, the tasks.

provided by ZPD cannot be achieved independently but with the help of external assistance, it could be accomplished. In the context of EFL university students and AI-powered tools. The AI Chabot, acting as a virtual tutor, providing personalized feedback and scaffolding is the same as a teacher providing hints or mostly examples to help a student understand a grammar rule, which facilitated learners' active engagement and knowledge construction, aligning with the principle of sociocultural theory.

James, P. Lantolf., & Poehner, M. E. (2020). In their work. They explore the intersection of sociocultural theory and AI in the context of language education, focusing on concepts such as interaction or known as internalization, dynamic assessment, and emphasizing once more on mediation. For instance, an AI- driven vocabulary app can adjust the difficulty level of exercises based on student performance to represent the sweet spot for learning, providing just the right amount of challenge to facilitate learning, Making the tasks used at the first shift alongside with the learner's competency.

Dynamic assessment, a deep notable concept that Vygotskian believed in the focus on understanding a learner's potential through interactions' methods. For EFL students at the university of Tlemcen where access to native English speakers is limited, AI chatbots could provide valuable opportunities for conversational practice and personalized feedback based on the level of student. This engagement for multilingualism students could facilitate the previously mentioned "inter-psychological" to "intra-psychological" process where the student gradually internalizes the rules of English grammar and improves their speaking fluency through interactive assessment methods. Sociocultural theory also provides insights into the development of linguistic autonomy, which basically means the ability of students to use AI tools effectively and efficiently, rather than becoming overly reliant on them.

For instance, checking grammar through AI-powered grammar checkers should mean using the tool' suggests without explicit evaluation to develop an understanding of grammatical rules, otherwise the overly reliance would lead to limited linguistic autonomy. The ZPD facilitates language acquisition through social interaction and targeted support.

Expanding upon the sociocultural perspective, this research also draws upon Translanguaging Theory to investigate the dynamic use of multilingual resources.

AI has been growing increasingly in education, opening new fields of already existing theories (D., Kovanovic, et al. 2023), the authors of the article entitled *Learning theories for artificial intelligence promoting learning processes,* discuss learning theories and frameworks in terms of structure, psychological, biological, and computational aspects while rethinking them for the age of artificial intelligence (AI). The authors introduce the idea of group of groups in their paper, which refers to the major role of culture in international collaborations to shape learning and knowledge development.

Macro level, where the focus is on a large scale that is cultural and interdisciplinary interactions shape expertise. The authors extended Vygotsky's ideas by incorporating Engeström's expanded six-node model. Cultural-Historical Activity Theory (CHAT) (1999). Examining various elements that contribute to learning, such as rules, community, tools, and the roles individuals play to allow the process of shaping knowledge by collective activity of many groups interacting and reflecting across disciplines and cultures.

The intermediate structures such as institutions or smaller communities are at the meso level making certain elements from macro level condense. For instance, a community representing its people, their identities, and their functions in learning processes are what shape global community and feedback processes at the meso level. Notably, guiding learners from being novices to becoming experts. Learning on a small-group scale happens at the micro level. However; learners of small groups can also participate in macro-level activities with no denying it. Expanding furthermore, a group of learners at the meso level might volunteer with knowledge and skills to knowledge development at the macro level. The concept of group of groups suggests that AI in education involves multiple disciplines, taking into context linguistics, linguists can collaborate and merge new fields just like biologists and chemists.

As previously mentioned, AI has been growing rapidly as well as it being influenced by cultural expectations, policies, and global knowledge networks. Vygotsky mainly focused on individuals and small group learning while Engström's CHAT model expanded more his principles to analyze how learning occurs across different levels.

Speaking of sociocultural theory that sheds light to human culture, therefore one of the essential aspects of it, Music. In the book of *Handbook of Artificial Intelligence for Music: Foundations, Advanced Approaches, and Development for Creativity,* Miranda (2021). And while focused on music, her work still relates to SCT when AI is seen as a mediational tool transforming music composition and cultural development, while at that language processing. Generating polyphonic music (Miranda, 2021, p. 807).

The passage provided expands on the idea of how deep learning models (GANS) generate multi-instrumental music to ease the learning process by using structure representation (piano roll). The key challenge emphasized on maintaining coherence across multiple instruments, this is addressed by using shared input data. Taking language into context, both music and language have an intricate structure in sequences (music; notes/ language; words) and both follow hierarchical rules (music; chords/ language; grammar). Additionally, the AI models used for polyphonic music generation can also be applied to AI-assisted language learning in maintaining syntax, vocabulary usage...etc. Through models like GPT.

These are theoretical connections between much and language from a cognitive and computational perspective. Furthermore, Graph-Based Representation, Analysis and Interpretation of Popular music, Lyrics Using Semantic Embedding Features (Miranda, 2021). This passage navigate framework that enhance the understanding of semantic and structural of lyrics through temporal and structural information as in analyzing the sequences, lyric formats, and common song structures step by step to represent various properties of lyrics as elements within a graph then to implement features as extraction tools to comprehensively characterize lyric graphs analysis and complex network methodologies.

The process of analyzing the lyrics through graphs aligns with identifying patterns in language and the outcome would reveal word relationships, syntax patterns, and recurring linguistic structure. For instance, word embedding (AI-based models that capture word meanings) that are used to analyze lyrics, can help EFL students to visualize language in a structured manner while also implementing a strong reading comprehension and vocabulary retention.

The intersection of AI-powered tools, music (aspect of culture), and language can be navigated through the interface of Sociocultural Theory in technology and its mediates learning and cultural development once again through Cultural-Historical Activity Theory that is an extension to the former theory, where it views learning as occurring within social and cultural contexts; AI in generated music is influence cultural evolution and so it does in language.

For instance, many people listen to music, particularly the younger generation. EFL students and while most of them are youngsters listen to music in foreign languages making the process of learning the correct pronunciation easier and more memorable. This mental ability is fostered by the social interaction of listening to music and sometimes repeating the lyrics. Furthermore, this chapter highlights yet another theory which is Translanguaging theory that is significant to the research with it contributing studies and findings.

1.3.2. Translanguaging Theory

Translanguaging is the act performed by bilinguals of accessing different linguistic features or various modes of what are described as autonomous languages, to maximize communicative potential. Li Wei (2022) challenges the traditional view of named languages in his work, arguing that rigid linguistic systems do not operate a multilingualism dynamic process. Various modes of AI facilitate for users to blend linguistic features from multiple languages seamlessly. For example, AI enhances the language use in real-time communication by supporting the practical application of translanguaging, and this aligns and resonates with Gracía's emphasizes on the idea of maximizing communicative potential by leveraging all available linguistic resources.

To illustrate more, an EFL student might use an AI-powered language app to read a text in English, discuss it in Arabic, then receive feedback in a mix of both languages. This context reflects the translanguaging process, where the learner's full linguistic repertoire is utilized to enhance understanding and communication.

Furthermore, translanguaging pedagogy affects learners' cognitive processes through the integration of multiple languages, reinforcing enhanced problem-solving and creativity. Breaking the mold of linguistic correctness and streamlining the journey of understanding and expression while underscoring the social benefits, including cultural affirmation. Taking multilingualism students in context, translanguaging supports the idea that learners should be able to use their languages to engage, express, and develop skills. This theory explicates the nuanced nature of bilinguals to recognize their language mixture practices, and language perception over time and across various contexts. Specifically, it acknowledges that communicative situations determine the linguistic practices of multilinguals.

Challenging traditional views of language as fixed, separate, and entities with fixed rules (Li Wei & Gracia, 2022). To emphasize the fluid process of meaning-making and interconnectedness of multilingual repertoires, particularly in digital environments where code-switching and code-meshing are readily facilitated by AI.

Notably, in a multilingual household, one might start a sentence in Arabic, then switch to French and finish it in English. This example demonstrates how in translanguaging, the same multilingual speaker might blend the three languages within a single sentence, using words and possibly structures from these languages to express an idea more effectively based on the topic, the person, and the emotion, without addressing the languages as separate because they are not.

This means that translanguaging challenges the idea of rigidity of boundaries in language usage, to emphasize the natural Integration of language perception. Similarly, Li Wei (2011) argues that translanguaging is not just about using two languages together but about creating a new space for meaning-making that transcends the boundaries of named languages.

At first glance, translanguaging might seem like simply mixing or switching between languages (e.g., code-switching). However, Li Wei emphasizes that it is more phenomenal than just combining languages mechanically. It is about the intentional and strategic use of multiple languages to achieve the three essential elements of language use which is communication, understanding, and expression. This is a holistic process that reflects the learner, or the speaker in general cognitive and social realities, because translanguaging allows individuals to express ideas, solve problems, and connect with others to construct meaning in a space free from the limitations of using one language.

This space is a complex process in which creativity and adaptability enable the individual to navigate social and cognitive tasks. For example, in university settings, AI tools help multilingual students construct meaning, such as, an AI-powered writing assistant might help a student express complex idea by blending languages, reflecting the fluidity of translanguaging. Similarly, Lei Wei argues with how linguistics treats languages as separate, named entities like English, Arabic, and so on, because he truly believes that multilingualism does not operate within rigid systems. Instead, it blends and integrates languages in a way that reflects their lived experiences and cognitive processes, and AI tools strengthen Lei Wei' claims by challenging the idea of "named languages" by allowing multilingual students to use their linguistic repertoire freely.

For example, the preparation of a presentation in English might be challenging for some, therefore, the student may use an AI translation tool to translate the terms into the native language for better understanding, to blend explanations and create slides that mirror their thought process. This involvement of AI exemplifies Li Wei's idea of creating new space for meaning-making. Building on the principles of translanguaging theory, which encompasses innovative language practices such as code-switching.

AI-powered tools may foster linguistic autonomy among multilingualism university students. Where linguistic autonomy refers to students' capacity to make independent choices about their language use and strategies.

Building on this, Canagarajah (2011). A prominent scholar in applied linguistics, explores the role of linguistic autonomy in multilingual education, defining it as the ability of students to make independent choices regarding their language use and strategies. Canagarajah argues that translanguaging is a natural and common practice among multilingual individuals. It reflects how people use their full linguistic repertoire to communicate, think, and solve problems. Empowering students to make independent decisions about their language use and learning strategies.

Chapelle, C. A. (2024). Open generative AI changes a lot, but not everything. *Modern Language Journal,* 108, 534-540. The article mentioned AI as a multilingual communicative tool which reflects translanguaging theory' view on language as a fluid dynamic among multilingual speakers where the process in communication is driven by their full repertoires to communicate.

When interacting with AI-powered tools, particularly large language models like ChatGPT linguistically autonomous students are more likely to select appropriate language resources and AI features (e.g., translation tools, grammar checkers, or speech recognition) to support their learning needs, and adapt this tools to fit their unique language practices and preferences, such as previously mentioned, using code-switching strategies within AI-powered platforms, and to critically evaluate the output and suggestions provided by AI tools, questioning and modifying them based on their linguistic intuitions and academic goals. Consequently, this smooth process is attributable to the translanguaging approach, where language has no restrictions or boundaries, generating natural integrated multilingual interactions.

Moreover, Chapelle emphasized on AI's role in supporting multilingual learning and posits that AI reshaped discussions on both teaching and learning language, reinforcing the idea that multilingualism is an asset rather than a barrier. Translanguaging principles also share the same fundamentals of encouraging students to use various king resources in education rather than being restricted to a single language.

The article highlights the concept of reimagining language authority and learning, where translanguaging pedagogy does the same by challenging traditional views of 'standard' language where it has authority and privilege over others. The article references to AI traditional idea disruptions, expanding more, AI do not generate through linguistic correctness. Instead, it generates passages based on diversity of language models.

The article references to AI traditional idea disruptions, expanding more, AI do not generate through linguistic correctness. Instead, it generates passages based on diversity of language models. Translanguaging principles explains that multilingual students should be able to speak, read, and write critically while using language rather than simply adhering to monolingual norms imposed by traditional schooling. Chapelle highlights concern in his article about AI's role in education and language learning, emphasizing the need for "critical engagement with technology guided by human teachers." AI operates in a multilingual, flexible way to support language users in breaking down barriers between languages and to be able to produce cognitive engagement by automating linguistic processing.

Chapelle did not mention translanguaging theory in his article. However, the ideas in the article and translanguaging pedagogy holds similar views on language where Chapelle emphasizes that AI should be a tool (not the guide itself) guided by educators rather than a replacement for critical language engagement just as how translanguaging stresses the importance of human agency in language learning. how Canagarajah' work primarily focuses on the collaboration between a linguistic partner and students, emphasizing that AI powered tools are actual linguistic partners rather than mere tools, aligning with the concept of translanguaging theory.

He also criticizes the fixed biases in linguistics by introducing the concept of code-meshing where multilinguals are blending languages for various practices to emphasize the holistic linguistic repertoire. "All the languages we know have been characterized as translanguaging" (Godwin-Jones, R. 2025). Learners can naturally blend and shift between languages. This integration reflects their linguistic repertoire, cultural knowledge from different languages. According to the article written by Godwin-Jones, R. (2025). Technology integration for less commonly taught languages: AI and pedagogical translanguaging.

Language Learning & Technology, 29(2), 11-34. The article states that while translanguaging theory has been acknowledged in applied linguistics, the use of theory in actual formal education settings remains controversial with the need for balance between immersion and multilingualism.

The traditional SLA theory (Savignon, 1991), which promotes immersion- based instruction that Favors maximizing the target language while discouraging L1 use. However, this article showed recent studies that emphasized on how incorporating L1 can support scaffolding, language play, motivation, and collaborative interaction. "A bilingual turn slowly underway, and a social justice turn emerging on the horizon" (Ortega, 2019) and the work of Cenoz & Gorter (2014) in opposing the traditional SLA theory and discussing how multilingual learners strategically use all their linguistic resources in communication and learning without the particular need of focusing on multilingualism. And many more other findings that investigated L1 support.

Despite the rising prominence of translanguaging, the author highlights how this theory's benefits remain descriptive rather than empirical. Overall, Godwin work suggests that translanguaging can enhance language learning with further empirical evidence to understand and benefit from it. This where AI-driven tools play a crucial role in supporting translanguaging practices (Allman & Guethler, 2021) discussing and emphasizing how digital tools facilitate fluid language use and bridges the gap between linguistic divides in education settings.

Translanguaging pedagogy as a theory and a practice was discussed by Cummins, Jim. (2019) in his work, he engages in a dialogue between theory and practice to demonstrate how translanguaging supports cognitive development, identity affirmation, and academic success in immersion programs. Therefore, bilingualism is developed through two separate monolingual instructional routes (Cummins, 2005). Language is flexible and evolving, multilingual learners should be able to practice native language alongside additional languages (Canagarajah, 2012).

When multilingual learners use all their languages from multiple languages concepts, alongside with reflectiveness to the native language. They will reinforce their cognitive processing and become more creative and flexible for problem- solving. In the “two solitudes” approach, language skills are developed separately and that reinforces division between language groups. Therefore, bringing a sense of optimizing bilinguals and promoting cognate awareness (Cenoz & Gorter, 2022), it's also worth mentioning that cognitive development is enriched with social integration. Translanguaging validates learners' identities, and experiences. fostering better communication and integration in multilingual communities.

Facilitating better learning and social integration for multilingual students (Conteh, 2018), the “two solitudes” metaphor encourages the separation and keeps translanguaging as theory does not practice. AI-powered tools emphasize the metaphor and separate languages (eg., translation tools). However, with time evolving, the newer models of AI are trained in real-time code-switching and providing adaptive capabilities for multilingual learners rather than enforcing rigid English-only approaches (eg., adaptability towards various languages with their dialects). Cognitively, the “two solitudes” paradigm could break through cognitive-based translanguaging practices (García & Wei, 2014). Gort & Sembiante (2015), extends the idea more by highlighting how translanguaging fosters better social integration for students, allowing them to adapt their linguistic and cultural repertoires, thereby moving beyond the limitations of the “two solitudes” model. Translanguaging pedagogy empowers the learners and AI generated tools work as a bridge to remove the gaps between languages, allowing users to draw on their full linguistic repertoire to foster linguistic autonomy in engagement of multimodal literacy (Donley, 2024).

Another theory that aligns perfectly with translanguaging. Affordance theory, a theory that expands more broadly about how AI-powered language tools afford opportunities to blend languages and navigate the linguistic landscape.

1.3.3. Affordance Theory

Originally developed by James J. Gibson (1979) in the context of perception speaks of four key points. The environment to be perceived. Secondly, the information for perception. Thirdly, the activity of perception. At four comes about the awareness of what one perceives. His book "The Ecological Approach to Visual Perception" and while it does not address AI tools, it can be fruitfully interpreted to understand how AI-powered language tools "afford" and enable multilingual practices and language learning experiences for EFL university students. Gibson proposed that the extended earth, something real that can be seen, played the role of "space" in vision, it's the surface that supports the objects. (Gibson, 1950, p. 46). Gibson believed in the directness of perception, his ideas showed that the space perceived does not need to be filled with additional information because it already has enough, and it eases the path for the brain to gather the perception directly, relying solely on the information in the space in front of the eyes.

This aligns with how AI responds to humans by recognizing the individual's abilities, habits, and competence. For instance, Gibson mentioned that seeing objects would also mean recognizing patterns of their surfaces as a texture gradient that makes one able to perceive. For example, an object (e.g., a glass of water lying flat on the table with the water flowing down from it in a certain shape) the interaction between the object (glass of water) and the surface (the table) provides invariant information about the flow of water spilling. Similarly, AI-powered language tools could provide information (object) needed based on the student's competence (surface).

According to Gibson who always questioned the eye's autonomy, he explained that seeing with eyes is not as perceiving. Because perception builds a dynamic relationship between the cognitive processes of an individual alongside with their environment. Speaking of the environment, learners can utilize environmental affordances outside the traditional perspective of the classroom to enhance language learning (Vera Lúcia Menezes de Oliveira e Paiva, 2011). Gibson argues that the environment structures the light that carries the information about the object to be able to perceive it.

His ideas challenge the traditional view of perception as passive and limited, including language perception. Instead, he highlights how humans perceive and interact with the world on a psychological level which expanded the path for designing AI and robotics systems that perceive and act in human-like ways. Therefore, affording for learners direct and active opportunities.

The affordance of an object is a specific property that determines just how an object could possibly be used. Gibson's book "The Ecological Approach to Visual Perception". Deals deeply with the affordance theory, because it one of the central principles he discussed, this theory and as explained in the book. It refers to the actionable properties of the environment. To explain furthermore, affordances are the offers provided to an organism in immersive environments in language learning to facilitate intercultural development and language acquisition (Taichi Yamashita & Takehiro Iizuka, 2017). Gibson's ecological approach emphasizes that perception as detecting meaningful information in the environment and affordances are the line linking between this information and the organism's goals and actions. To simplify more, this theory and while not directly, suggest that AI-powered language tools possess unique properties that enable and encourage specific actions and practices related to language learning. Creating new affordances by offering real-time feedback and personalized support that enables learners to integrate their native language (Donley, 2024), for EFL students, AI tools afford actionable properties such as personalized language practice, real-time feedback, immersive communication environments, and access to diverse language models.

Similarly, in the context of AI-powered language tools, this theory also examines the invariance of independent affordances of the learner and remains the same regardless of who is interacting with the tool or environment. Meaning that with a direct perception from individuals can immediately perceive and understand the action possibilities that objects, tools, or environments offer without needing to consciously process or infer these possibilities. Expanding more, affordance highlights the degree to which a learning environment accurately represents the real world and provides authentic experiences.

According to Donley (2024), the instructional applications of CHATGPT and AU tools shed light on the intricate relationship between an organism (learner) and the environment (AI tool used by teachers), where the tool's affordances directly influence the learner's actions and behaviors. Thus, shaping an ecological learning experience, integrating various environmental cues. Gibson's framework challenges traditional views on perception, for better understanding of how multilingual speakers perceive and use language in real-world environments, and how AI is informed for a better design development. Language itself can be seen as an affordance; providing opportunities for communication, understanding, and learning.

Linguistic autonomy recognizes, act, and respond to these affordances in ways that align with one's goals and identity. Because linguistic autonomy allows individuals to perceive and act on the affordance of using multiple languages. To reiterate, in multilingual settings such as in class or causal situations, linguistic autonomy allows individuals to perceive and act on the affordances of using multiple languages. Thus, an EFL learner might use both English and Arabic to complete a presentation given at class, perceiving the affordance of blending languages for better understanding, and as previously mentioned AI tools are providing linguistic affordances that support autonomy throughout AI language apps (Yunus Dogan & Tarik Talan, 2024).

Ultimately, AI can predict and explain affordances from images using graph neural works (Ching-Yao et al., 2017). In the same vein of the affordance theory, self-determination theory emphasizes on the impact of AI tools on multilingual learners, particularly EFL students as taking the research provided into context.

1.3.4. Self-determination Theory

A notable framework in the psychology field that explores and examines human development in terms of behaviors, personality and the process of motivation. Self-determination theory (SDT) was originally developed by Edward L. Deci and Richard M. Ryan in the 1980s, this framework particularly emphasizes on the three psychological needs: autonomy, competence, and relatedness importance in fostering intrinsic motivation and psychological growth. SDT highlights the three needs for by offering and providing challenging experiences that match the

individual's needs and levels. Findings highlight that intrinsic motivation is related to student success and well-being (Joshua L. Howard, et al., 2021). Starting with autonomy which plays a crucial role in language learning and the design of AI-powered tools.

The two primary founders of SDT defined autonomy as the need to feel that one's actions are self-endorsed and aligned with one's values and interests in their book "Intrinsic Motivation and Self-Determination in Human Behavior" (1985). Autonomy is defined as a broad psychological construct that applies to what motivates an individual and what makes their behavior in general. It involves having a sense of choice, an experience of volition, and ownership over one's behavior, completely divergent from being restricted because of controlled motivation. This argument could be applied in language learning. Because the concept of linguistic autonomy aligns with STD's emphasis on autonomy as a basic psychological need.

Furthermore, SDT's autonomy supports the learner's free choices in which language they should be using or how to use it. For example, EFL students can select articles, videos, or recordings related to their hobbies without any restrictions. Therefore, reflecting a smooth autonomous motivation for the sake of personal growth, improved performance, and increased persistence in the face of challenges. Not to forget mentioning how EFL students often have multilingual backgrounds. Whereas, they have a strong tendency and free will to navigate multiple languages and

cultures contexts. These advantages align perfectly with autonomy, primarily linguistic autonomy. Expanding further, Howard et al, (2021) found that the meta-analysis emphasizes that an environment supporting autonomy leads to impowered motivation. AI-powered tools can be designed to offer a degree of autonomy by allowing learners to control their learning pace and receive feedback that affects the cognitive processes heavily. As in how AI systems can form context-senescence feedback that might lead to improved linguistic autonomy, enabling to manage and integrate multiple languages socially and academically more effectively.

The key finding in the book of "Intrinsic Versus Extrinsic Goal Contents in Self-Determination Theory: Another Look at the Quality of Academic Motivation" 41(1), 19-31. Shows that autonomy-supportive environments enhance intrinsic motivation and learning outcomes for multilingual students. Additionally, digital tools such as AI tools help foster these learners' tendencies and needs by empowering them to be self-aware and have the ultimate control over their language use while also enhancing their skills. Taking a holistic approach, many learners deal with many situations that could harm their learning process and reduce their own linguistic autonomy. Therefore, not being able to fulfill the three needs explained by STD (Al-Khasawneh, et al., 2024).

Developing and achieving competency is another central concept SDT and taking language learning and AI-powered tools impact in context, the most important thing for a learner is feeling the progress through their learning journey, feeling competent enough with enhanced intrinsic motivation. "The need for competence refers to the desire to feel effective in one's interactions with the environment and to experience opportunities to exercise and extend one's capacities" Ryan, R. M. & Deci, E. L. (2000). To amplify, SDT precisely emphasizes competence as an important aspect in shaping motivation for individuals. Though, low behavioral engagement and achievement could lower the competence needed and not meet the STD exceptions (Link, S.2024), the authors argue that students displaying behavior and social problems may be inclined to feel their psychological needs are fulfilled.

AI breaks the wall between the lack of motivation and the learner's social problems, through deep communication that hits the exact mentally harmed spots by AI chat bots which are currently trending (Zhang, Y., Wu, et al., 2023). After that, AI provides feedback tracking the learner's progress to make the latter feel a sense of achievement and motivating continued effort. For example, AI-powered tools like grammar proved detailed explanations of errors, thereby unconsciously raising their awareness and motivation.

In a broader context, Li and Zhang (2023), while not explicitly framing their work with the self-determination theory. Their work still illustrates how AI can operationalize the SDT principles in language learning contexts. Although demonstrating how AI tools provide relative

feedback that enhances the learner sense of competence and translating into sustained intrinsic motivation and long-term language acquisition. However, the question raises about the cognitive gains and whether they sustain language proficiency, as suggested by Self-Determination Theory or reduce it.

All for one and one for all is the connection between one to another, and that is what relatedness refers to (Deci & Ryan,2000), nurturing a sense of belonging and supportive interpersonal relationships. In language learning, this need of relatedness, particularly determines how much the individual is comfortable with their own linguistic abilities. Chabot's are one of the widely used artificial intelligence technologies built for interactions and communication (Li et al.,2023), within the framework of SDT, these bots are designed with natural language processing and empathetic responses that can mimic human-like social interaction which led to offering a sense of relatedness—personal connection for the learner. Li et al. (2023) explore in their work factors that address users' need for relatedness in several ways. These factors influence consumer trust in AI chatbots, therefore reflecting their needs in setting elements such as expertise, responsiveness, reliability, empathy, personalization, and brand trust.

For instance, empathy is one of the key components in cognitive development and chatbots can convey empathy to the user's needs. Though, it could be considered as manipulation, but the fact stands. The more chatbots convey empathy, the more a personal connection is created; feeling a sense of being "heard". This motor skills development, mirrors authentic human interaction, thereby satisfying the user's need for interpersonal connection and smoothly functioning a spontaneous learning for language learners by integrating social factors needed.

To relate and be related to, trust is a necessary element, and a central theme in Li et al. (2023), chatbots are built on this element to make users feel a sense of safety as they are sharing their data. For learners, the more they trust the chatbots the more are likely to remain engaged, spontaneously interacting and therefore practicing more. By virtue of the continuous back and forth dialogue that nurtures a sense of connection akin to having a study buddy enhancing motivation over time. Reliability and personalization align with relatedness, as chatbots can encourage positive ongoing engagement by personalized replies and stimulating reliable interactions.

1.4. AI in Language Learning

AI revolutionized language learning by influencing how individuals process, and become aware, then to have control on the switch and perception in languages. The complex process of language learning involves a variety of factors leading to numerous possible outcomes (Jin Ha Woo & Heeyoul Choi, 2021) Thereby, AI in the learning process fosters a personalized, engaging, and innovative learning experience. Personalization is the starting point to recognize learner needs and to respond to those needs (Lian & Sangarun, 2017), taking AI into context, personalization refers to how AI algorithms actively mediate linguistic interactions by analyzing individuals' abilities, and shaping their autonomy on automated systems (Rebolledo Font De La Vall & González Aaraya,2023), AI algorithms are able to provide and shape tailored learning plans that maximize progress and engagement.

Furthermore, AI doesn't stop at personalization the individual's needs but it also creates immersive learning environments that stimulate real-world language interactions through interactive simulations and virtual reality dialogues to build for the learner a sense of agency and self-reliance (Subhangi Namburi & Gail Hopkins, 2023), AI facilitates communication by pretending to understand the needs of the learner. As a logical outcome, learners can practice their language skills in contextually rich scenarios that they are able to choose, making the learning experience evolve smoothly and more efficiently.

While traditional language learning methods involve time consuming tasks and feedback for the learners to know about their competence level and recognizing their strengths and limitations. Conversely, AI-powered tools distribute immediate and analytical information on the student's linguistic level. As a result of this near-instant feedback, learners would eventually master language rules and perfect their pronunciation more efficiently in a shorter amount of time compared to the traditional language learning methods.

AI in language learning aligns deeply with the four prominent theories previously mentioned: Sociocultural theory, Translanguaging theory, Affordance theory, and Self-determination theory. Initially, sociocultural pedagogy illuminates the importance of social interaction, culture, and context in language learning. AI-driven chatbots and virtual partners facilitate authentic interactions, allowing the learners refreshing approaches to practice language use in diverse social contexts, because AI, and aligning its tools with the perspective of this theory, serves as a mediating tool, playing a crucial role in language learning. Moreover, AI-powered tools' have abilities to adapt instruction based on learner progress, and this supports the theory's focus on individual differences and personalized learning paths. While sociocultural theory highlights the degree of culture, including AI shapes the cognitive abilities feeding the learner's brain with what they need.

Whilst translanguaging theory highlights the learner's cognitive and intellectual abilities to move between languages for meaning-making. Illustratively, AI supports this approach by enabling learners to combine and switch languages seamlessly with no restrictions whatsoever. For instance, AI-powered systems can present data in a learner's dominant language and target language, fostering translanguaging practices.

Additionally, AI can analyze and respond to learners' translanguaging practices during conversations with chatbots, providing feedback and encouragement to develop metalinguistic awareness. This alignment with translanguaging theory helps learners leverage their full linguistic repertoires in the learning, though it could lead to standardize language use. At the same time, affordance theory, as previously mentioned, focuses on the potential actions' effects that an object or environment offers to an individual. In the context of language learning, AI provides new affordances by offering learners access to diverse, personalized, and interactive learning resources.

Personalized learning paths by AI tools revolutionize language education by the precise tailored and flexible curriculums (Syed Muddasir Hussain,2024), this aligns with affordance theory as AI affords available tailored learning experiences that cater to each learner's unique needs and promote language development. Building upon the theoretical foundations discussed earlier, which underscore the potential of AI to facilitate diverse, personalized, and interactive language learning experiences, recent empirical investigations have sought to validate these theoretical underpinnings through rigorous analysis.

In their work, Tidemann & Thottingal (2020), the study, which employed a mixed-methods approach (OPUS-MT) which is a project that creates tools and resources for machine translation. Trained neural models they named (NMT; AI that uses neural networks), this is similar to how a human learn language through time owing to the fact that learners need exposure to language in order to learn it and these OPUS-MT stuff uses AI to recognize language patterns, thereby process it and assist it automatically to translate languages, this project align with sociocultural theory, which emphasizes the importance of immediate and continuous interaction in learning processes.

On the other hand, Emily M. Bender, Timnit Gebru, Angelina McMillan-Major, and Margaret Mitchell authored an influential paper titled "On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?" (2021). This paper investigated and critiqued large language models (LLMs), claiming that these models lack connection to the real world in every sense and it does not reflect on the learner's needs. Instead, they are energy consumers like GPT-3 that require massive computational power, and the costs are not worth it because the LLMs do not truly understand language. They just generate fast responses based on their training data without any real comprehension. These models are simply stochastic parrots with limited data. The authors of this study argue that the carbon footprint of training these models is enormous, contributing significantly to climate change. Furthermore, they claim that the data used to train these models often includes biased or harmful content as in stealing the individual's database for harmful purposes, which the models then perpetuate.

AI can manipulate and cause existential threats. The authors also raise ethical concerns about data colonialism which refers to how large corporations harvest user data from low-resource languages and communities to train their models, without proper compensation or benefit-sharing. In March 2023, Italy's data protection authority, Garante per la Protezione dei Dati, raised concerns about ChatGPT's compliance with GDPR. They questioned whether ChatGPT could generate false and misleading information, which obviously would lead to severe consequences for users. While using quasi experimental design, it demonstrated that AI tutors can provide scaffolded learning experiences, guiding students through complex language tasks, and thus supporting the development of higher-level language abilities, in line with translanguaging theory. Therefore, the integration of AI in multilingual practices requires a nuanced evaluation. AI tools have a positive impact on EFL students' practices and cognitive development by reducing the students' anxiety levels and improving learning outcomes (Jin Ha Woo & Heeyoul Choi, 2021). In retrospect, books and real-life interactions were the only possible sources to learn languages. The concept of AI broadened the possibilities for an easier learning path to everyone.

1.5. Technology and Multilingualism

Technology has pervasive and complex impacts on the world. Similarly, in linguistic phenomena and social realities of multilingualism. Rapid advancements in communication technologies have transformed how multiple languages are used, learned, perceived, and negotiated in various domains. This outlines key aspects to consider when examining the multifaceted relationship between technology and multilingualism. The intricate relationship between the two starts with how technology facilitates language spread, often through global media and the internet.

Therefore, allowing homogenization, with global communication platforms promoting various languages. And while the homogenization theory does not investigate language. Instead, it refers to the process of systems, cultures, it bears relevance to language and how this theory explains the standardization because of the evolution of technology. The latter also accelerates language change by popularizing new forms (e.g., texting acronyms, memes) and encouraging code-switching between languages (e.g., translanguaging). Furthermore, technology mediates identity formation and expression. Multilingual individuals may strategically use different languages or language varieties online to present desired self-images to global audiences. Social media platforms enable connection with linguistic communities worldwide, strengthening or reshaping language-linked identities. Another key feature in the relationship between technology and multilingualism, digital language divides, because technology does not simply just demonstrate access to information and communication, it also exacerbates existing linguistic inequalities.

The homogenization theory deals with what is called a "Multi-Scale System". Taking language into context, the micro scale refers to local linguistic patterns (the individual's perception of language), and macro scale refers to the bigger picture of language. Homogenization emphasizes how the small-scale contributes an understanding to the large-scale. For paradigm, AI-powered tools are the newest evolution of technology, that are trained to memorize diverse linguistic patterns to be able to predict the next word by homogenizing the statistical patterns by relying upon the data it contains of billions of sentences.

Despite the preservation and promotion of endangered languages. Only a small percentage of the world's languages are represented online, leading to digital language marginalization and endangerment of lesser-resourced languages. Which to some degree, makes language globalization appear as an illusion rather than reality.

For instance, indigenous communities use social media, applications, and AI tools to preserve, teach, and promote endangered languages. AI-powered tools for language documentation and revitalization efforts are providing new hope for linguistic diversity preservation.

Drawing upon relevant investigated theoretical frameworks and empirical evidence; the sociocultural approach to language learning (e.g., Lantolf & Thornton, 2006) posits that tools mediating communication (such as AI-powered apps) can scaffold language development and support identity formation among multilingualism learners.

Considering the concept of translanguaging (Gracia & Wei, 2014), which advocates for leveraging all linguistic resources. Incorporating the affordance theory (Gibson, 1979; van Lier,2004) adds another layer to this analysis. Affordances are actionable properties that objects offer to users, inviting interactions and supporting and specific language practices. By applying this theory, it emphasizes more about the flexibility of the relationship between multilingualism and technology, because the affordances of AI-powered tools such as automated correction, instant feedback ...etc. Influence EFL students' writing process, pronunciation practice, and reading comprehension strategies. Additionally, the ecological perspective on language learning (Van Lier, 2004) emphasizes the dynamic interplay between learners, the target language, and the environment, including digital tools. Examining how AI-powered language tools shape the EFL students' linguistic ecosystems.

Though, technology's role in facilitating or perhaps challenging code-switching and language maintenance among EFL students is an important aspect to consider. AI tools, especially instant translation and voice recognition software, can lower the cognitive load of switching between languages by automating linguistic processing, potentially weakening critical thinking and reducing cognitive engagement. For instance, machine translation tools (NMT) models might suggest L1 words or phrases during writing, or speech recognition software might accurately transcribe L1 utterances within an L2 context.

This could encourage and increase the frequency of code-switching, as a result, increasing hybrid language use and potentially enhancing students' unique multimodal identities. Examining the linguistic aspects in technology furthermore, the interplay of languages in code-switching, made easier by AI tools, can lead to innovative linguistic practices and creative expression among EFL students.

Code-switching can serve various functions like expressing identity, conveying emphasis, or filling lexical gaps. However, from a purely linguistic perspective, there might also be concerns related to language maintenance; over-reliance on AI tools could potentially lead to fossilization of language errors. For example, people rely 10% more on LMs when responding to questions involving calculations and rely 30% more on LMs that are perceived as more competent (Kaitlyn. Z, et al, 2024), the continuous AI- tools correcting learner's productions might prevent them from naturally internalizing linguistic structures and rules and reducing their cognitive capacity to memorize new data; thus, the learner would eventually maintain erroneous patterns instead. Additionally, the influence of machine translation output on student's writing might result in unidiomatic or unnatural language sentences. Making AI-generated responses easier to detect for a teacher who could easily recognize natural language patterns from unnatural ones. It is also worth mentioning how students' heavy reliance on AI-generated translations, make their L2 production might maintain L1 sentence structures and patterns, challenging L2 language maintenance and acquisition of target-like features. Furthermore, the impact on phonological development could be another concern considered. While speech recognition tools can provide immediate feedback, extensive reliance on them might delay the internalization of correct L2 phonological rules and maintain L1 pronunciation habits instead of transitioning towards native-like L2 pronunciation.

While AI tools can empower EFL students with on-demand resources for code-switching and expressive language use and have so many more advantages, they also present challenges to language maintenance, potentially leading learners towards unnatural production patterns and delayed internalization of L2 rules.

Speaking of technology and its impact would shed light on the learner autonomy and how they are influenced and impacted.

1.5.1. Learner Autonomy and Technology

Technology has an impact on learner and that so far is understood. But the question stays the same about whether the impact is good or bad. "The impact of technology on learner autonomy in language education" by M. Thomas and M. Reinders (2019).

This article presents an analysis of the capabilities and limitations of technology in enhancing learner autonomy, with a focus on online language learning environments. In this article, Thomas and Reinders (2019) claims that technology does a great job in facilitating self-directed development in learning by offering customized learning paths, progress tracking features, and adjusting their learning strategies, accordingly, promoting autonomy and self-regulation. As well emphasized in the previous passages, technology, particularly AI-powered systems have a massive impact on learner autonomy, and cognitive dissonance. The AI that particularly contributes to learning environments and learning motivations. Outcomes in significant improvement in fostering the learner autonomy (Samuel Ocen et al., 2025), thereby fostering language awareness and enabling learners to have the ultimate ability of understanding and employing linguistic independence in owning vocabulary, structures, and pragmatics. The autonomous learning experiences are based on persistent innovation by providing more developed multimodal to create a very close to reality experience, which would seem terrifying to some because of the over reliance that might happen.

However, the language learning apps that utilize AI like Duolingo, Anki…etc. offer interactive flashcards and help the learner receive, recognize, and proceed language through built up crucial loop and spaced repetition. Likewise, with metalinguistic awareness that helps the learner improve language skills. A learner can perceive and remember linguistic patterns through a specific process in the cognitive context which is metalinguistic awareness and sociolinguistic memory (Francesca D'Anglo, 2021), to be aware means to be conscious and intuitive yet some awareness is biased by societal stereotypes. That raises the question of is that actual awareness when it's biased? Linguistics challenges this type of awareness by fostering a strong sense of autonomy on learners to experience a cognitive reappraisal by reflecting on their language and how they utilize it, to be critical on sociolinguistic features, to be accurately aware.

AI can help with regaining cognitive clarity by providing neutral learning experiences cutting off the stereotypes from getting reinforcement. Now, does technology and particularly AI escalate or reduce cognitive engagement? Certainly, leveraging technology can foster metalinguistic awareness, thereby enabling learning autonomy throughout AI-powered tools that are nuanced to be unbiased of sociolinguistics.

Virtual reality (VR), a stimulation of the real world improves skills in operating systems (Jaydeep Dhillon et al, 2025), with how much technology is evolving, the simulators are able to replicate real-world scenarios in a very natural manner and provide haptic feedback which would ease the practice tasks for learners with no need of a guide or a mentor. Shaping the learner autonomy as self-directed and easily integrated. This immersive revolution provides an authentic language practice and a reflective practice, a key component in autonomous learning. However, some learners are triggered to environments like VR (e.g., motion of disturbingness), though this technology still comes out as a bridge between the theory and practice, increasing the learner' competence.

The more technology is evolving the more likely language learning would take less time challenging the five to seven years learning duration (critical period) that many scholars before believed in. Wide range of digital tools afford convenient, and flexible solutions for learners to choose the methods and approaches that suit their learning style and satisfy their needs.

1.6. Cognitive Dimensions and Social Integration in AI-Driven language learning

In discussion of cognitive dimensions, empathy is one of the central considerations. Empathy and emotional intelligence (EI) are two closely related concepts which are essential for understanding and managing human emotions and building healthy relationships (Rebecca Ward & Malgorzata Ragosko, 2025), a multilingual student that is able to switch between multi languages, is highly influenced with empathy unconsciously, as the learner would be a better communicator that understands the nuanced social and cultural integrations of the individual's language, thusly taking into account their linguistic backgrounds into account.

To possess empathy entails fostering awareness and understanding towards others in multifaceted forms. Similarly, enough in approaching languages, because empathy does not just stop at helping individuals to understand others and communicate effectively without the fear of being disrespectful or causing misunderstandings. Empathy does not stop simply at that, but it also promotes deeper understanding of language perception, thereby fostering emotional intelligence.

EI and AI are reciprocal in language learning, it is apparent through many studies done that EI provides intrapersonal awareness to regulate one's emotions based on the context given while communicating and it another side to the same coin with how it also provides interpersonal awareness, signifying the ability to acknowledge the emotional cues of others (Aliakbar Tajik, 2025), the author also emphasized on how AI could help EI by creating personalized and adaptive methods to approach the emotional aspect of language acquisition and enhancing speaking tools that mimics the real individual notes and tones of speaking to reinforce an emotional interaction that supports deeply the learning environment.

Positive psychology movement refers to shifting the mental state from negative emotions (e.g., bad thoughts, burnout) to a better state that aligns with positive emotions and wellbeing (Yonliang Wang, et al., 2021), it is easy to spot the weakness and deficits rather than acknowledging strengths and potential. For instance, a multilingual student who faces difficulties with pronunciation problems and focuses solely on this weak spot, they are not able to recognize their good qualities in maybe good grammar or advanced spelling despite the pronunciation issue. This situation would put the student in a deficit cognitive process of language.

The student will eventually be stuck in a never-ending cycle of low self-esteem, anxiety, and insecurities. Mihaly Csikszentmihalyi (2014), emphasis in his work on creativity and how it's essential in fields like education, science, and technology. His work can be applied to language learning by creating approaches that are out of the ordinary. AI tools, virtual reality, and technology in general can help shape a creative atmosphere for learning which would eventually encourage learners to express themselves with unique creativity in targeted language. Csikszentmihalyi's work is an optimal experience to help individuals and particularly multilingual students in this context to explore their positive emotions, such as joy, and excitement, to promote natural creativity and to prevent the negative emotions from reducing the cognitive process of learning languages.

Language development happens throughout sessions of interpreting and understanding the meaning of the thoughts that come out as words, and nonverbal cues. This is what language perception is about, a concept that does not stop processing at visual symbols but also the cognitive and emotional processes to make sense of what is a language. A learner perspective is tied to language perception due to how the perspectives play a crucial part in influencing language development.

Alternatively, humans rely on a nuanced notion to shape their perspective, equally in language learning where learning and utilizing it would be applied based on stereotypes, and assumptions. In synopsis, social integration influences contexts in which languages are used, due to how social relationships can have an impact on language perception, the cultural background is an additional point to note as the cultural upbringings shape the language perception naturally.

Taking into context, multilingual students, superficial social integration may ruin the language perception, due to the fact that these students need exposure to different perspectives that might challenge their perspectives, this acquisition critic fixed model (e.g., stereotypes of language usage), to promote a dynamic interaction, where learners are encouraged to confront views that clash with their own, and to also encourage in engaging with unfamiliar language nuances, for learners to have free will of comparison between their own identity (background, culture…) and the target language nuances (Christa Nieuwboer & Rogier Vant Rood,2016). A solid piece of social integration that is not superficial or forced but instead fluid to foster effective communication. Advanced AI-powered tools like ChatGPT, and chatbots with cultural scenarios databases can provide insights on opposing viewpoints and foster a socially integrated learning experience. For instance, an English student can use chatbot to role-play a conversation, the chatbot can mimic an English native speaker and expose to the learner culture tensions, (e.g., chatbot highlighting how the word “exhausted” is not frequent to explain tiredness in British English. Instead, the locals use “Knackered”).

Cognitive dissonance accelerates learning by making the brain work harder (the more the brain must deal with different and opposite ideas, the more it gets uncomfortable and in need to deal with the conflicts). AI can help the brain to deal with cognitive dissonance more efficiently by offering applications that stimulate debates between cultural misunderstandings and then offer fast feedback. These stimuli which involve confronting differing viewpoints, foster empathy and awareness of complex cohesive societies to be integrated enough and not necessarily adapt.

With the right social integration, cognitive dimensions can be explored without being conflicted or biased on stereotypes and assumptions to promote a smooth and nuanced learning experience for multilingual students, AI-powered tools foster an automated assessment that integrate the principles of language perception and avoid conflict resolution in the learning process.

1.7. Conclusion

This chapter is a presentation of the general aim of this paper by identifying and providing insights on how language, particularly multilingualism is learned and applied by EFL students, and how AI-powered tools may impact this process in various ways.

Ultimately, it is evident throughout this chapter how AI holds a variety of perspectives in this topic, revealing the complexity of the learner's abilities and their capabilities to learn upon these abilities throughout the previously mentioned theories and the research done by scholars to discuss technology impact on learners.

Therefore, this chapter provided an objective understanding of the impact of AI on multilingual students in terms of competence, reliability, and autonomy by exploring what learners go through while using AI and how it affects them both mentally and emotionally.

The theories did not directly address AI in learning. Instead, they investigated the individuals' experiences in life, mainly in learning language. The theories indirectly explored how AI mimic the steps that the individual go through to learn languages while providing them their needs of belonging, satisfication.

The following chapter deals with students' experiences with AI in their multilingual studies while also examining the methodology process and also highlighting the results gathered from this research to later on answer the research questions.

Chapter Two: Research Methodology and Data Collection

Chapter Two Research Methodology and Data Collection

2.1. Introduction

Over 60 million students now encounter AI as they use digital tutors, educational computer games, or a variety of intelligent tutoring systems optimized to elaborate algebra, computational design software, geometry, or interactive programming in different languages, texts, and problems resolutions.

The chapter presented will focus on different insights of this research, highlighting multilingual students' correlational relationship with AI as tools for learning languages and its impact upon them. Given the linguistic focus of this research, augmenting a methodology that was particularly designed to examine influence, perfectness, and performance of the students while interacting with AI-powered tools. The study provides an integrated mixed-methods approach to ensure accuracy and reliability, by incorporating quantitative and qualitative data collection tools.

Following this chapter further on, the premise that AI has the potential to help or harm multilingual students in the department of English in Tlemcen. To study AI's potential impact on multilingual students, the study requires a research design that can collect broadly based information about perceptions, attitudes, and behaviors of non-specialists about AI. The belief is that quantitative studies that harvest data from a cross-section of participants are key. Such as focus groups that provide visible quantitative patterns in more depth and a description of the setting and participants while contributing valid data. In addition, a survey was used to gather generalizable data on students' use of AI in multilingual contexts; and semi-structured interviews with document analysis to explore individual's personal experiences and perceptions in more depth.

This chapter with its data highlights a cross-sectional analysis and not a longitudinal analysis. Acknowledging the trend of evolving ("the moving target problem"). Rather than measuring actual changes in learning outcomes, the instruments mentioned assess learners' intention to adopt or adapt to AI-driven methods (e.g., chatbots, translation tools, or personalized tutors). While intent is treated as a necessary precursor to behavioral change, the real-world effects on proficiency or cognitive processes would require further empirical validation.

The findings of the sections below will highlight observable patterns in a cohesive approach to how learners engage with (or resist using) AI in language acquisition, avoiding claims of direct causation. Thus, this approach frames AI's role in shaping learning strategies while contributing to a nuanced understanding of the implications of AI for multilingual students, from the need for a critical investigation into its long-term cognitive and pedagogical impacts.

2.2. Research Design Choices

This section highlights the research design choices chosen in order to provide significant results for the study. Therefore; answering the research questions.

2.2.1. Research Philosophy

This study implements an interpretivist research philosophy, which contends that knowledge is subjective and differs from an individual to another depending upon embodied experiences. The critical theory suggests that knowledge and technology are neutral but are shaped by power dynamics, ideologies, and historical inequities (Freire, 1970). The philosophy of this study guides the reader to ask about who benefits

and who is marginalized with AI's growing role in education. This perspective justifies the use of qualitative methods to gain in depth insights into the participants' perspectives. Additionally, a quantitative approach is applied to capture broader insights. This combination supports a mixed methods design that provides both depth and generalizability.

2.2.2. Research Type: Qualitative and Descriptive Approach

The central objective of this research is to gain qualitative and descriptive insights. Rather than relying on numerical measurements or statistical generalizations, the study aims to interpret the results of multilingual students' experiences with AI tools such as ChatGPT, Deep seek, Grammarly, and similar algorithms, while also describing their perceptions through open-ended survey responses, semi-structured interviews, and document analysis, the study

monitors students' interactions with these technologies in various linguistic contexts, particularly when switching between or integrating languages in writing and communication.

2.2.3. Research Strategy

In order to provide valid results to complete research. A structured strategy is essential. "A research strategy is a plan of action that gives direction to your effort, enabling you to conduct research systematically and efficiently" (Leedy & Ormrod, 2019, p. 5), a strategy serves the roadmap when conducting research by minimizing errors that could occur during the data collection.

2.2.3.1. Case Study

This study was conducted at University of Abu Bakr Belkaid, specifically focusing on students from the English department. Adopting a case study design triangulates questionnaire-derived trends, interview themes, and document analysis to reveal how institutional, experiential, and behavioral factors intersect in AI-mediated outcomes.

The participants were selected based on their academic studies enrolled in a foreign language program, where they seem to experience using AI tools in a multilingual context. A total of sixty students participates. The participants represented a range of linguistic backgrounds while being undergraduate, with proficiency of speaking English, Arabic, and French to some. This diverse group provided an ideal setting for investigating how students interact with AI tools in a multilingual academic environment and how AI impacts on multilingualism.

The mixed methods research that has been conducted integrated a survey that offers numerical data that highlights general patterns among multilingual students for a starter and the interviews expanded the investigation more by providing detailed qualitative insights, a document analysis examining AI-generated feedback for bias and many other aspects.

Each method has a distinct and analytical role yet at the same time they engage in promoting a nuanced analysis of the research topic. To answer the research questions and align with the hypotheses.

2.2.3.3 Justification of Methodological Approach

This research is considered scientifically social interacting with previously found theories, following a careful and systematic methodology to contribute answers to the research's questions (Olayinka Akanle, et al., 2020). To understand the *how* and *why* behind the action of using AI tools, the case study was the proper approach. Given the evolving nature of AI technology and its role in academic settings, an open and exploratory strategy is essential to capture nuanced usage patterns and depth insights. The considered methods for this research are ground-breaking and relevant to the study (Olayinka Aknale, et al., 2020).

2.2.4. Time Horizon: Cross-Sectional Design

This research is based on a cross-sectional time horizon, therefore, the data collected does not apply to all students' experiences and their perceptions. The data collected from 45 participants was on a specific timeline, which is during the academic year of 2024-2025, particularly in the 10th of April till the 20th of April. Capturing perceptions, practices, and experiences regarding AI among students in different academic years L3, M1, M2.

2.2.5. Study Participants: Multilingual University Students

The participants of this study include students from the third-year license (L3), first-year master (M1), and second-year master (M2) levels in the English department. They are selected based on their multilingual background, as most speakers are Arabic with fluency to an average level in French and English to varying degrees, mainly in English. The already existing linguistic diversity has made an ideal subject of investigation of the interaction between language use and AI technology. The study seeks to understand whether multilingualism affects their engagement with AI tools and how these tools may influence their linguistic choices and learning strategies and what are the outcomes of that influence.

2.2.6. Data Collection Tools

As interactions with AI continue to increase and it becomes more prevalent in educational settings, the question of how these multilingual students interact with AI tools and learn about AI literacy emerges. Findings were from a small-scale relying on three research instruments to collect data: a questionnaire that gathered general data, semi-structured interviews referencing the cognitive functions of the multilingual students, and document analysis involving a systematic evaluation of texts, complementing the survey and interviews by analyzing material evidence

2.2.6.1 The Questionnaire

There is substantial literature behind the use of questionnaires to evaluate various aspects of educational technology and assess its impact on students' outcomes. In this study, the questionnaire applied included a mix of closed and open-ended and closed-ended questions with the aim of gathering general information about students' AI usage, why they use it and for what tasks (e.g., translation to understand texts, grammar checking and correction, paraphrasing). It was particularly useful for reaching a broader sample of participants from different academic year levels, L3, M1, and M2, within the English Department Therefore, reflecting participants' views on the impact of AI on their writing and language development. Thus, the accuracy and consistency and clarity of the closed-ended questions formed a significant aspect of research methodology which are known as validity and reliability (Hamed Taherdoost, 2016). This structured format allowed a significant identification of patterns in students' AI usage. Overall, the questionnaire served as a fundamental aspect of the data collection process by detecting general trends and identifying basis patterns for the interviews' participants' selection for deeper qualitative exploration.

The questions were asked and answered in English, the survey conducted is found in (Appendix A).

2.2.6.2. Semi-Structured Interview

The data collected for this dissertation study includes interviews discussing with the participants and overall understanding of the interaction patterns, attitudes, and personal reflections regarding the result in the use of guest accommodations by students. Analyzing digital transcriptions of students engaging with the AI tools, in this study, the data was obtained from semi-structured interviews due to how particularly useful in exploring the depth of students' perception of AI's role in language learning and consequently affecting their multilingual identity mainly in academic settings and secondary in social contexts. The open-ended format made it possible to probe further into what could be considered as sensitive or even nuanced issues that may arise ethical concerns, linguistic inferiority which is a major issue for a multilingual, or dependence on technology. The interviews helped greatly in obtaining information that cannot be explored through quantitative methods. A conversational yet purposeful approach was guided by a set of prepared questions as mains while also remaining open to new insights of the topic as the interviews emerged. This approach allowed investigating the complexity, and dynamic of each participant's experience.). The sample interview transcript that is anonymized in (Appendix B).

2.2.6.3 Document Analysis

The third instrument used to achieve a triangulation approach that comprehensively explores the entirety of the topic. Documents analysis provides a systematic approach to interpret materials to provide rich and effective data (Bowen, 2009, p. 27) while also complementing the questionnaire and the interview is document analysis where three documents were carefully selected after deep research and exhaustive reading in order to shape the data needed. The details about the three documents are found in (Appendix C).

2.2.7. Ethical Considerations

A researcher always aims for achieving the correct conclusion and there is no way to obtain the latter fully, yet the researcher continues their journey by using ethics (Nazmul Hasan et al., 2021). In this study, being ethical was one of the key elements of writing professional research where the anonymity of the respondents was respected and accommodated.

Furthermore, the data provided throughout this research is solely based on the participants' responses with their free will to volunteer, and students were informed that they may withdraw at any time without penalty, ensuring their safety. The participants who contributed to the questionnaire and the interviews were consent of the application. The participants' identities and information were not mentioned and not requested in both instruments for confidentiality and protection of privacy. The research also minimized potential risks of discomfort to participants by respecting different opinions and even cultural differences.

Prior to data collection, participants were provided with an informative sheet for the interviews explaining the research purpose and scope. Moreover, the participants were kindly requested to provide a verbal consent to being recorded.

The data collected is securely stored and the access to it is limited to authorized personnel adhering to relevant ethics guidelines and regulations to ensure compliance with the ethical standards.

This study mainly aims to provide literature and analytical knowledge reflecting the social and scientific perspectives of this research. At last, the participants were referred to by pseudonymous terms in the data analysis.

2.3. Data Analysis

In mixed approaches, the principle of triangulation when at least two distinct methods are employed as in this research exploring the latter from different angles. “In any research project, the researcher has to utilize a variety of sources to gather the required data.” (Awang, 2012, p.8). Each research instrument contributed in providing a data analysis process through quantitative and qualitative lens, supported by descriptive statistics, the questionnaire data provided the descriptive statistics to highlight the trends. As for the interview and document analysis, they provided a qualitative data.

2.3.1. Questionnaire Analysis

From the questionnaire where the data was first numerically coded then tabulated to identify general patterns in participants' responses regarding their use of artificial intelligence in academic settings. The analysis was conducted upon gathering all the data needed from the respondents which were 45 students from various linguisticbackgrounds. The frequencies and percentages were calculated to highlight the most common trends, such as the frequency of tool usage and perceived usefulness shaping triangulate findings.

2.3.1.1. Descriptive Statistics

Descriptive statistics are used to summarize the data obtained from the survey in an organized manner by describing the relationship between variables in a sample (Parampreet Kaur, et al., 2018). Upon completion of data collection, the responses from the questionnaires were entered into a Google Format, then it was thoroughly reviewed
for any errors in entry, inconsistencies, or missing values. The questionnaire have quantifiable responses.

The foundation of understanding the general patterns and trends within the collected data happened through the descriptive statistics generated from the closed-ended questions, promoting a clear overview of the participants' responses regarding the use of AI and how often they use it and their perceptions of it. This analysis directly addresses the research objectives which is investigating the common knowledge about AI tools impact on multilingual students and providing answers to the research questions.

Whereas for the first question, descriptive statistics was used in this study to illustrate frequencies and percentages of AI tool usage among participants and their reported changes in multilingual practices. As for the second research question, the responses reflected it through means and standard deviations of responses to likert-scale questions concerning the perceived effects of AI tools on language perception, cognitive engagement, and critical thinking skills. The three aspects of the second question were generally analyzed. Regarding the third question, descriptive statistics summarized students' opinions on AI-generated empathy and its potential influence on their learning outcomes.

It should be also mentioned, at this level, that three other remaining questions are mainly concerned with a qualitative analysis due to the nature they hold in terms of respondents' answers.

2.3.2. Interview Analysis

This study relied on semi structured interviews for obtaining rich qualitative data, whereby the interviews had been recorded then listened to thoughtfully for clear transcription that assessed the reliability of respondents through verbatim for an outsourced professional transcription service.

The data transcribed was managed within a word processing document allowing for an immersion with the data by reading and re-reading the transcripts to gain a holistic understanding of the participants' narratives and identifying initial patterns and potential areas of interest. Codes of these interviews were extracted and compared within each other.

2.3.2.1. Thematic Analysis

This study relied on thematic analysis (TA) that contributed a flexible qualitative method to focus on specific areas which are indemnification, analyzing, and interpreting patterns of themes across data sets. The raw data collected from the survey was transformed into codes that resulted into 3 main themes with 6 sub-themes. To contribute furthermore to this thematic analysis, the study integrated Braun and Clarke model with their six-phase framework (2006), describing how the data was analyzed in transparency, academic structure, and systematic process in relation to the research questions.

Familiarization with the Data

All the collected data from the interview's responses were transcribed then read and re-read to gain deep understanding and capture the insights of recurring ideas or contradiction.

Generating Initial Codes

After the data was familiarized and adapted, the second step was to generate the data systematically and coded (labeled) by identifying meaningful segments that captured

meaningful features related to the research questions. This process was done manually using color-coded annotations for the questionnaire reviewed qualitatively, particularly open-ended responses.

Open Coding

This is the first systematic stage of coding in qualitative analysis. For this study, it examined the qualitative data collected from the interviews into discrete parts, investigating them closely, and labeling them with descriptive codes allowing the study to capture key ideas, actions, and concepts throughout a careful line-by-line analysis process thus emerging the codes into existence naturally.

Searching for Themes

After the coding was done, similar to related codes were grouped into broader categories. These groups then were thoughtfully integrated and examined to capture important aspects and then determine whether they could form coherent themes that revealed the research' patterns.

Thematic Coding

The thematic coding which is also referred to as the axial selection explains the relationship between codes to connect the above-mentioned categories, and organize

the textual data, focusing on what is being said rather than how concepts relate. It is more detailed and specific compared to open coding.

Reviewing Themes

Once the themes of thematic analysis were collected, they were checked based on their relevance against the full data set. Some initial themes were merged to conduct solid main themes, and the other themes were separated and divided into sub-themes and in addition to that, the ambiguous codes were reassessed to ensure internal consistency and distinction between themes.

Code-Theme Mapping

This code refers to the system of linking initial codes from the open coding to review the themes and broader them by visualizing how raw data evolves into interpreted patterns. Thereby, ensuring the ground of themes in data and finally clarifying their relationships.

Defining and Naming Themes

After following all the previous steps, clear definitions were finally implemented for each theme in a concise, descriptive, and analytical manner
All the collected data from the interview responses were read and re-read to gain deep understanding and capture the insights of recurring ideas or contradiction.

Finalized Themes

A good theme is not just about a label but a conceptual organizer that reflects both prevalence and significance in the dataset (Virginia Braun & Victoria Clarke, 2006).

The step before the last in Braun & Clarke's (2006) thematic analysis represents the critical stage of code of finalized themes which refers to the process of defining, naming,

and polishing the themes as mentioned above. The themes were refined into clear and actionable insights about AI's role in multilingualism learning.

Common Pitfalls and Fixes

The themes should be considered as valid data at this point, reporting the findings of the interviews accordingly. Thus, contributing knowledge that would be considered a reflection of the data obtained. Thus, the themes of this study were carefully chosen, examined and even fixed at some point to adjust correctly with the participants' responses. "The judicious use of raw data extracts is vital; they anchor claims in the participants' realities and allow readers to interpretive validity." (Braun & Clarke, 2021, p. 278)

Illustrative Quoting

To emphasize the value of a research, a proven methodology is needed. Therefore, a quote is presented. Quotations bring the text to life or bring life to the text. They serve as evidence, explanation, illustration, and representation of the findings that remain rooted in the data while enhancing readability and trustworthiness (Elo, et al., 2014). Which is what needed for clear and insightful data. This is the last stage where the study selected vivid quotes that humanize the data and valid themes, proving a quote for each theme.

2.3.2. Document Analysis

The document data were analyzed following the same analysis strategy as the interview analysis indicating that the documents were thoroughly read and coded. Then later on, the coded were organized into themes that were reviewed and refined to accurately represent the content and complete the interview data. Braun and Clarke's framework (2006) ensured an analytical and coherent data collection process.

2.4. Conclusion

The methods explored in this chapter were adopted in the research process to provide insights to the topic and answer the research questions. During writing this chapter, the focus was to provide a detailed triangulated methodology employed to investigate AI's impact on multilingual students, integrating quantitative and qualitative approaches that shed light upon descriptive statistics, thematic coding and emerging contextualized findings within institutional frameworks and authentic practices.

This threefold approach balances breadth and depth, allowing for cross-validation and corroboration of findings, which is the primary goal of triangulation. The descriptive design aimed to highlight the trendy accuracy among the students while the thematic analysis examined the participants' experiences with AI to identify patterns and shape them into valuable themes and the document analysis provided significant insights. Selecting the appropriate design was to ensure the validity of the research insightful findings.

The following chapter will explore the themes and discuss the finding without forgetting to mention the quotes conducted from the participants as they play a crucial role in understanding the findings and how they are divided.

Chapter Three: Results and Discussion

3.1. Introduction

This chapter was conducted by synthesizing the key findings and results of this study, drawing on the comprehensive analysis and the major themes explored in the preceding chapter. By integrating the insights gained from the literature review that is the foundation of a high-quality research, situating this study within the intellectual landscape, identifying gaps in already existing knowledge (Hart, 1998, p. 27), the data collection and the process of analyzing will be discussed in this chapter to give a nuanced understanding of AI impact on multilingualism.

The data of the survey provided mostly a quantitative analysis of numerical data emphasizing measurable trends and frequencies through descriptive statistics. The interviews data provided qualitative data generating in total of 9 themes, three being the major indicators of the analysis and the six sub-themes complementing the major themes. The document analysis conducted three major themes, connecting deeply within each other to provide rich insights into the research questions and overall, the hypotheses of the research.

A designed sequence emerged within the survey' quantitative data and the interviews' qualitative data created conceptual groupings reflecting the scope of interpretive integration in mixed-methods research.

The questionnaire was devised into five main categories referring based on the responses received from fourteen questions. The categories varied in forms of codes; perception, usage, multilingualism, agency vs. dependence, challenges. Under the founded five categories, responses reflected three sub-categories that would be explored through the chapter.

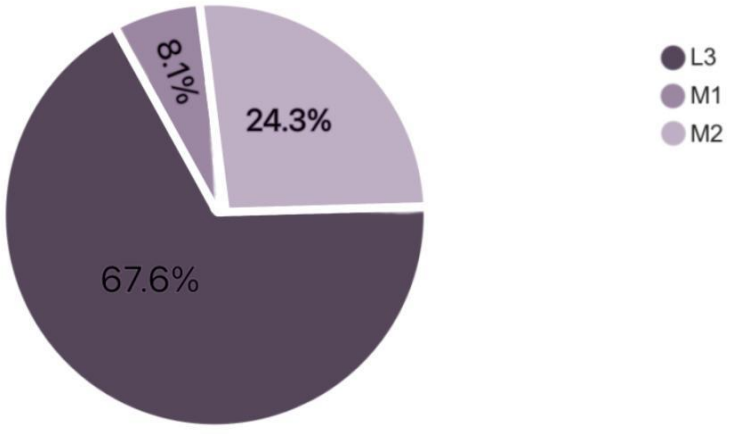
The interview's three main themes resulted in the form of themes for the first theme AI Tools in Enhancing Language Skills with; (1) AI tools help students in enhancing their vocabulary and grammar, (2) skills atrophy risks. The second theme, AI as a Cultural Translation in Multilingual Meaning-Making; (1) trust and interpretation, (2) AI code-switching. The last theme, AI as Linguistic Safe Space, the third theme also dealt with two sub-themes; (1) Creativity, (2) Language play. As for the document analysis three themes were conducted; AI Application in Multilingual Education. The second theme, Ethical and Practical Challenges of AI. As for the third theme; Multilingual Learners' Experiences and Needs.

The themes were unfolding naturally throughout the interview and the document analysis. The questionnaire played a crucial element in making a surface for complexity to be explored.

While writing this chapter, objectivity was an essential component to report the findings which will unfold smoothly as categories and themes. For a more detailed discussion upon the findings, the themes will be explored in depth, determining key concepts. Language perception, process, and practice are presented from the view of the respondents.

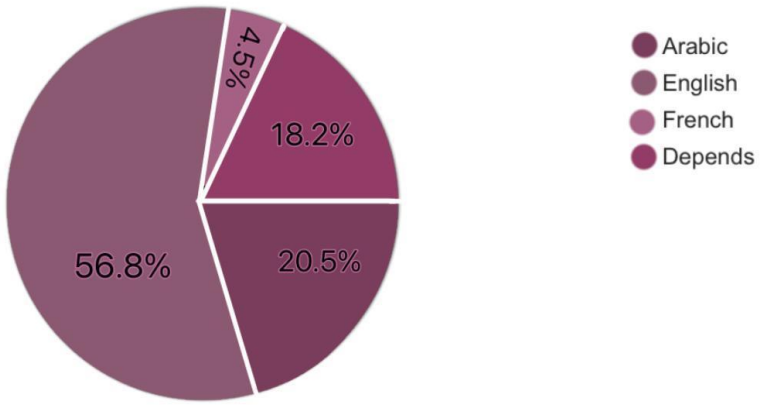
3.2. Sample Profile

Pie-Chart 1: Academic Year Level



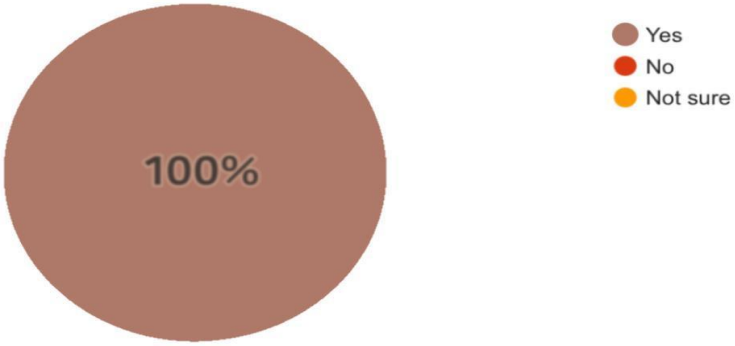
As based on the statistical analysis demonstrated in the figure above, the majority (67.6%) of the respondents are undergraduate students answering the questionnaire about AI' usage. While 24.3% of the participants were master one student, only 8.1% were master two students.

Pie-Chart 2: Language Preferred in Usage



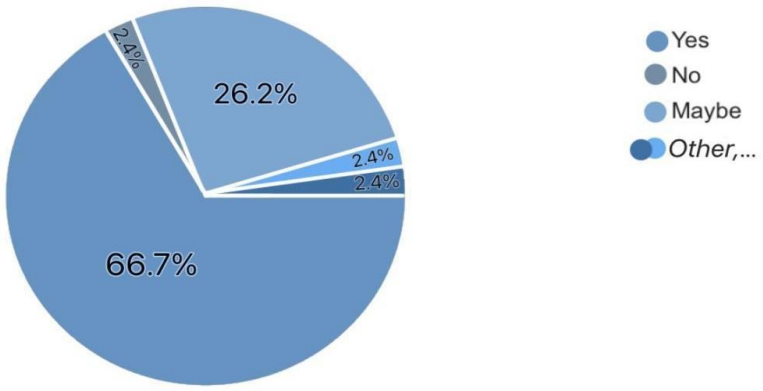
In the chart above, (56.8%) of the students prefer speaking English, (20.5%) prefer to speak Arabic. The remaining majority speak depending upon the situation, as for the remaining minority (4.5%) prefer to use French.

Pie-Chart 3: The Percentage of Students who Use AI



In the figure above, and within the scope of using AI, the statistical probability shows how many students use AI tools for academic purposes which appear as a 100% agreement.

Pie-Chart 4: Student's Opinions on AI as a Module



In figure (3.4), most students (66.7%) agreed to integrating AI as a course to be taught, while (26.3%) were in uncertainty of the matter. As for the remaining minority, (2.4%) students were against the inclusion of AI as a module to be studied, while the rest explained strongly why they are against it.

3.3. Questionnaire Results

As previously mentioned, the questionnaire' responses were generated into five categories and the figures above highlight these categories presenting a crucial understanding for the research questions.

The table below provides an illustration of how each category contributes to answering the three research questions.

Table 3.1.

Questionnaire Category	RQ1*: Multilingual Practices*	RQ2*: Perceptions of AI*	RQ3*: Empathy in Learning*	*Justification for the findings*
1/ Perceptions	**Partially**	**Yes**	**No**	**AI lacks the capacity for perceiving language code switching or empathy**
2/ Usage	**Yes**	**Yes**	**No**	**Align with the context of use, tool preference, lack of emotional impact**
3/ Multilingualism	**Yes**	**Partially**	**No**	**Autonomy loss and perceived AI control that may imply reduce cognitive engagement**
4/ Agency vs. Dependence	**Partially**	**Yes**	**Yes**	**Captures the technical barriers and emotional reliance**
5/ Challenges	**Partially**	**No**	**Yes**	**Direct track on language switching while indirectly reveals bias in AI support tools**

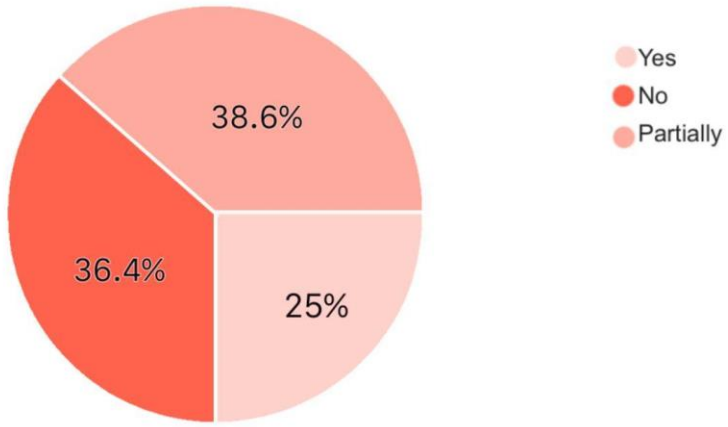
As shown in the table 3.1 the category 4 is the only one that addresses the three research questions, supporting the cognitive engagement concerns that are addressed in H2 and the emotional reliance and empathy questioned in H3, five categories reflect to the nuanced research questions, the findings are based of the participants' responses.

3.3.1. Perceptions

Students have attitudes, develop beliefs, and shape perceptions towards AI tools in language learning. Additionally, these areas include views on effectiveness, trustworthiness, and perceived benefits or drawbacks of using AI in their studies.

In the figures 3.1-3.3 a display of frequencies provided the category of students' perceptions on the use of AI for academic purposes where most responses were positive for including AI as a course in studies. This category was made up solely based on students' view therefore many findings emerged.

Pie-Chart 5: AI as Replacement of Traditional Learning Methods



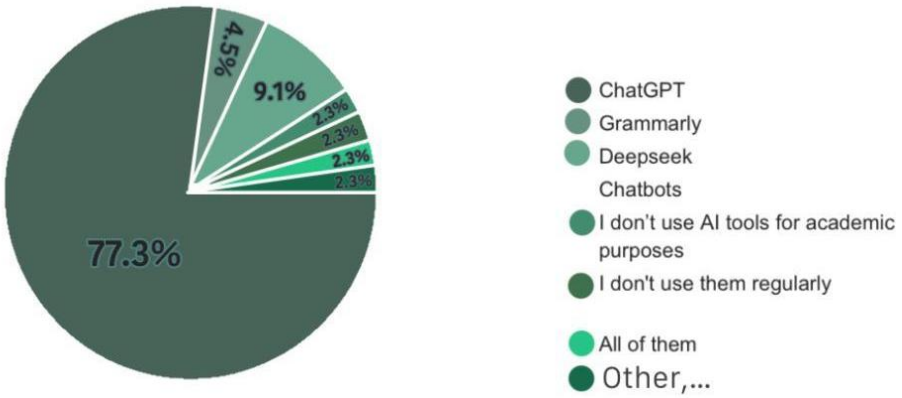
The graph shows how the responses were varied in three standard approaches. (36.4%) which is most respondents do not see AI tools as a replacement of traditional learning methods despite their usage of these tools. (36.6%) have agreed to see AI as a modern learning method while the remaining respondents (25%) are uncertain about this concept.

3.3.2. Usage

Students testified on using AI for academic purposes, methods, frequency, and purposes for which tasks AI tools were employed. The figure below covers the common applications and the patterns of engagement.

The majority of students (77.3%) reported using AI tools such as ChatGPT for academic purposes, while (2.3%) responses claimed of not using AI tools for academic purposes, (4.5%) reported of not using AI regularly, an estimate of (2.3%) reported to using all the options mentioned in the graph, (9.1%) respondents chose Deep seek and chatbots as their main source, while the other (2.3%) respondents chose Grammarly. The remaining respondents (2.3%) mentioned other tools known as Minute AI, Citesure, Gemini AI, and Block chain AI. The findings are shown in the chart below (Figure 3.6)

Pie-Chart 6: The tools Used by Students for Academic Purposes



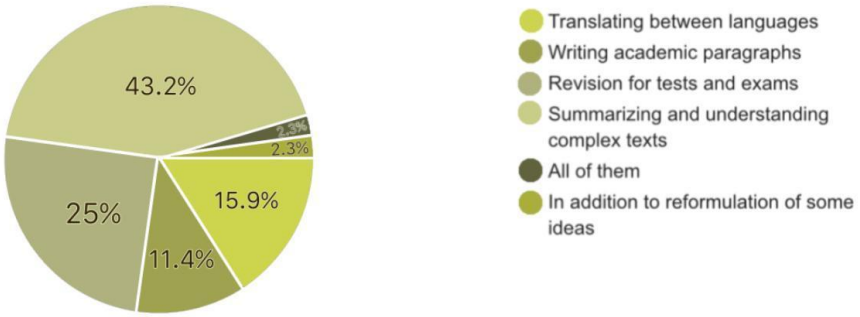
Speaking of AI usage would automatically bring focus on the frequency of usage. The average rating of AI usage is shown in the chart below.

Bar-Graph 1: The Average Rating of the Frequency of AI Tools' Usage

As the figure shows, the average rating is on a scale of five. (4.4%) to (13.3%) respondents claimed of not using AI tools frequently, (31.3%) respondents have reported of using AI in moderation, while (36.7%) out of the respondents reported of using AI tools frequently. The remaining (4.4%) respondents revealed that they use AI tools depending on the situation they are in which basically refers to occasionally.

The students' use of AI varied in form of different tasks, explored in the graph below.

Pie-Chart 7: Academic Purposes for Using AI

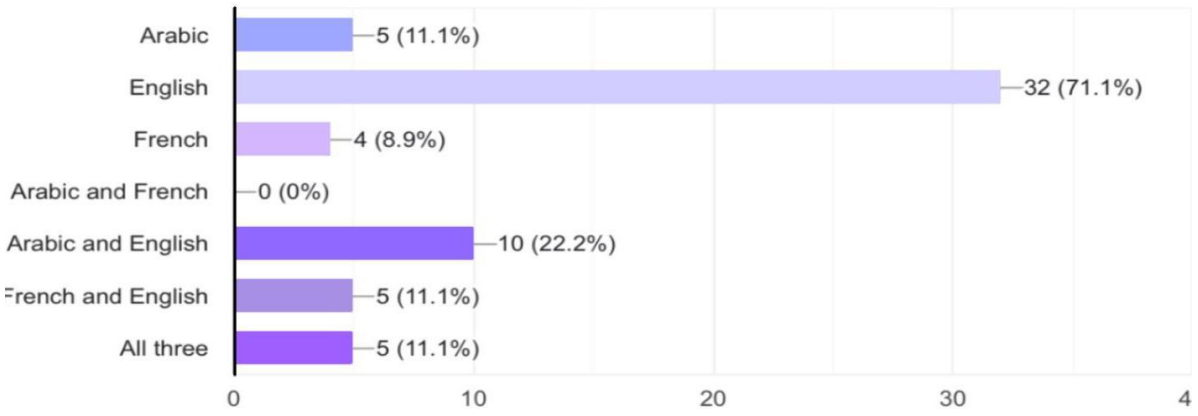


Most participants (43.2%) as shown in the graph, use AI for summarizing and understanding complex texts. AI is used for translating between languages for (15.9%) students. While (11.4%) students use AI for writing academic papers, (2.3%) use it for paraphrasing. (2.3%) use AI for all the mentioned options, and (25%) students use it mainly for revision for tests and exams.

3.3.3. Multilingualism

The role of AI tools in academic development is summarized by whether they hinder or support multilingual competence. This category was developed by the findings of how AI assists in learning multiple languages, code-switching, or maintaining linguistic diversity, as well as potential biases toward certain languages. The figure below explores which languages do students use most in engaging with AI.

Bar-Graph 2: Language Usage in Engaging with AI

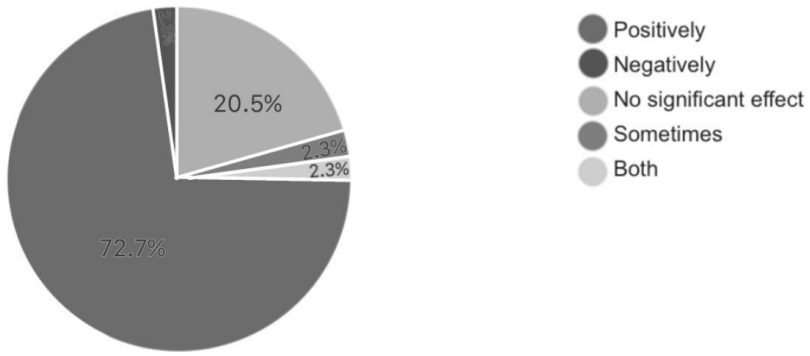


In the above graph, (71.1%) of the respondents use English as the main language in engaging with AI, while (22.2%) use both English and Arabic together. About (4.9%) of respondents mainly use French, (11.1%) use solely Arabic. None of the respondents use Arabic and French together in engaging with AI. Another estimate of (11.1%) use French and English, while the remaining (11.1%) use all three languages together.

3.3.4. Agency vs. Dependence

This category examines how the student can control their learning agency and over-reliance on AI tools. The findings explored whether AI fosters independent learning or creates dependency that affect critical thinking and self-regulation. Whether I have a good or bad impact on students. The results were solely based upon students' responses.

Pie-Chart 8: AI Tools Effect on Students

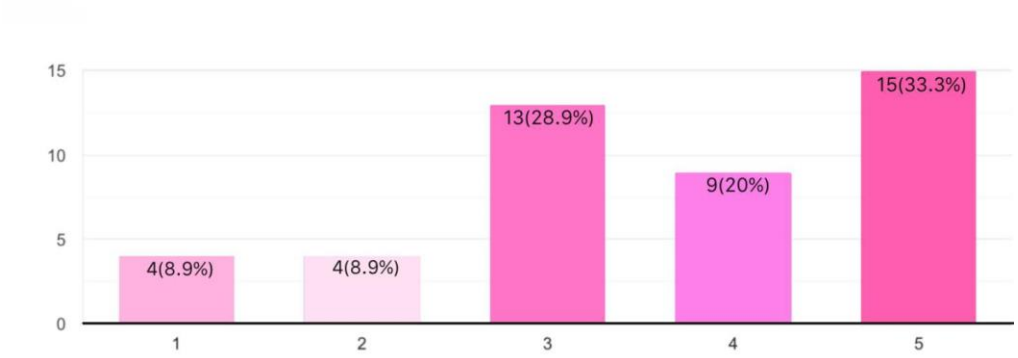


In the graph above (Pie-Chart 3.8), (72.7%) of respondents agreed on the positive impact of AI tools while an estimate of (2.3%) responded negatively towards AI tools effect. A few (20.5%) respondents referred to AI's impact on their autonomy as having no significant effects. (2.3%) respondents reported that AI tools have both the positive and the negative effect, while the remaining (2.3%) respondents expressed the same view of AI being positive or a negative influence based on the situation given.

3.3.5. Challenges

Students face difficulties when using AI tools in language learning. These challenges are included in the findings, and they vary differently. Many students responded to the questionnaire by sharing their average to bad experiences with AI in terms of AI's made-up sources, lack of correct translation, complex terminology that do not reflect the student' needs.

Bar-Graph 3: AI Tools Effect on Sudents (scale)



The data collection process was done similarly to (Pie-Chart 3.5) on a scale of five, participants responded on how AI tools handle multilingual tasks for them. (8.9%) rated AI handling at one out of five. Another (8.9%) rated the data algorithm of AI two out of five. (28.9%) respondents rated AI tools moderately three out of five. (20%) rated AI handling at four out of five which declares a good estimate. Most students (33.3%) rated AI tools handling multilingual tasks at a high rate of five out of five.

3.4. Interview Results

Firstly, the results are based upon five in-depth interviews until thematic saturation was achieved, each interview ranging from 30 to 50 minutes in length. Then the data obtained were analyzed using Braun & Clarke's (2006) six-phase thematic analysis. The latter yielded three major themes that centered the participants' experiences and perceptions regarding the use of AI-powered language tools in multilingual learning contexts. The following themes are discussed below, supported by illustrative excerpts from the participants' responses.

3.4.1. AI Tools in Enhancing Language Skills

Before AI was introduced worldwide as a tool for different purposes, students relied on other tools for mastering a language, reading books, listening to music, watching movies with no subtitles, and listening to podcasts. All these tools or rather said methods were considered as an enhancing step in language learning yet when AI was presented as a tool for learning, contrasting opinions emerged.

This theme illustrates how participants perceive the role of AI-powered tools in improving their multilingual language abilities. 3 participants out of 5 expressed that AI technologies, such as translation apps, grammar algorithms, and conversational bots, have become integral to their learning routines. The participants emphasized on the great potential of AI in increased autonomy, faster access to information, and in overcoming specific language weaknesses. This theme is divided into two sub-themes.

3.4.1.1. AI Enhances Vocabulary & Grammar

The respondents reported that AI has been a big influence in their academic career, they noted that AI had provided private mentoring without the fear of being judged for their level in English. “The personalized instruction provided enhancement to my grammar, particularly in essay writing” (P1). The content of this response shows clearly how the participant struggled with academic writing in English despite having a good grasp of vocabulary, ChatGPT assisted the participant in a real-time correction and immediate detailed feedback. As perceived here, it is evident that AI enhances language tools and that aligns with the hypothesis of the research, H1 (efficiency gains).

P1 also added “I always thought that the reason why I’m not improving in essay writing was because of my grammar, but while using ChatGPT, I realized that I struggled with the flow of writing too, ChatGPT was the one who pointed it out.”. As AI is able to provide better written academic versions for students, it also provides an alternative exploration of their strengths and weaknesses in language mastery. “I always enjoyed speaking English but the words I used were more slang, and again I realized that even my vocabulary was limited while chatting with chatbots.” (P1). As could be summarized, the participant had more limitations in language learning than they expected. It appears that the participants focused on one weak point which was the grammar efficiency, neglecting other issues that made their essay writing less than average. “I love the option of being able to call ChatGPT, I would talk for hours to improve my fluency, particularly in British English.” (P2). The second participant praised AI’s efficiency in how it adapted to their needs naturally, they requested that AI speak with them in a British accent. AI applied the request while also monitoring the participant’ vocabulary and accent.

3.4.1.2. Skills Atrophy Risks

Out of the five respondents, three claimed that AI tools are hindering their language skills. “The more we rely on AI, the more it makes us lazy and less productive.” (P3). The content of the participant claims that AI tools do more harm than good in English learning. (P3) also added, “As students we don’t realize that we have broken grammar until we submit an essay written by ChatGPT and the teacher immediately could tell that it’s not our work.” First, when English language or any other foreign language is spoken among students, they don’t realize the number of mistakes they are making, or they are not focused on developing structured sentences because what matters is just understanding context. Second, it widely differs when it comes to writing academic texts, teachers often make comments about the gravity of the mistakes students make, while in most cases it occurs because students don’t differentiate between the casual speech patterns and academic writing. Thirdly, AI tools like ChatGPT as mentioned by the participant often provide a well academic and structured text that the teacher most of the time can know it’s written digitally.

3.4.2. AI as a Cultural Translation in Multilingual Meaning-Making

By culture in language, the meaning could be expressed through various lenses such as the tone, idioms, and transparency. To make sense of the meaning behind words is the most important aspect to avoid misunderstandings and conflicts...etc. Based on the questions answered in the interviews, this theme was developed to examine how AI impacts cultural meaning-making.

Two of the participants had a strong reaction towards this specific topic because words are meant to bridge understanding gaps, in the cultural context, its reflect idioms, context-specific meanings to facilitate communication and understanding across languages, uncovering and conveying complex meanings, taking into account cultural references, historical context, and linguistic subtleties.

Potentially, in language teaching, the aspects above are all related with language learning, thereby for AI to be perceived as a cultural translation, it needs to promote and foster these aspects. Additionally, this theme was divided into two distinct sub-themes to provide a nuanced understanding of the findings.

3.4.2.1. Trust and Interpretation

To be able to use AI translations, the latter must provide and deliver an understanding of cultural nuances to build trust with the students from diverse backgrounds.

"AI translation tools work to a certain degree, otherwise it doesn't accurately convey the intended meaning." (P2). The response highlighted clearly how the participant doesn't particularly trust AI translation and only uses it when necessary. Translation is an expanded field that clearly demonstrates how translation differs throughout cultural lenses and AI is still developing to grasp this field. (P4) said on the matter "Frankly, AI does not respect cultural multilingual meaning-making." The direct implication shows how (P4) didn't have a flattering experience with AI in translation because the latter do not give justice for the characteristics of the human language across cultural and meaning-making. (P4) also added "One time I was scrolling on my phone and a word catch my interest, so I asked google translate, it gave me a completely different meaning compared to what the word actually meant." By mentioning meaning-making, the understanding of the term refers to how words are not translated solely by their actual meaning but rather by the context, thereby providing a meaning-making.

3.4.2.2. AI in Code-Switching

In a classroom a teacher and sometimes even a student may code switch to emphasize a particular meaning or a better understanding of a concept. In addition to that, code-switching happens often throughout academic contexts to casual settings for various purposes. In AI however it is different and that was discovered through the findings while exploring participants' experiences with AI in code-switching. "Sometimes, I try to send a vocal message to AI and I'm often in loss of words in English, so I include French and Arabic then ask it to only me in English." (P5), AI systems are able to comprehend the code-switching context when requested for a task. However, it must be reminded with which language it should respond. Expanding more on the matter, (P5) added "I prefer using Gemini for text writing, but the experience could be considered as average due to how if I switched between languages with just one word, it would answer me with the language I used for that one word."

AI does not grasp code-switching like humans do and it must be consistently reminded to stay in track of one language.

3.4.3. AI as a Linguistic safe space

Humans communicate, learn, and express their identities through language. Therefore, AI being considered as linguistic safe space is a transformative and challenging step in either protecting linguistic diversity or inadvertently homogenizing human experience where AI is providing a potential dual in language preservation in order to create an inclusive environment for language learners and marginalized speakers.

3.4.3.1. Creativity

Creativity refers to the source of all human creations so far that developed as an idea and then developed as a concept, AI is not differentiated from any other concept. “Growing up, I used to enjoy writing fiction and chatbots have made me enjoy writing fiction again as an adult.” (P4), One of the most famous tools of AI systems are known as chatbots where the individual can interact with a personalized bot and customize the role-play plot, atmosphere, twists...etc. The participant did not address AI as safe space but talked about how much time they consume in chatting with bots to write stories, developing unconsciously a linguistic safe space. “I had ChatGPT help me choose my topic’s thesis for me by requesting originality, rarity, and creativity.” (P3), the participant’ request towards AI was a push towards originality for their topic’s thesis and that was considered as creativity.

3.4.3.2. Language Play

Language play is not quite different from creativity. It just explores more the creative side in order to create the linguistic safe space. “I blend languages in using AI because sometimes I forget words from one language.” (P1), the participant express usage of AI in code-switching. AI can comprehend the language blend fast and respond to it to promote a sense of autonomy. (P1) also added “As much as I prefer blending languages in utilizing AI, sometimes I receive responses with just one language which make the flow of my request difficult for AI tools to understand.” While AI has the ability to use various languages and personalize the experience for the participant. It does not follow the flow of the language play all the time but instead respond to the participant with the dominant language they used. “I have set my chatGPT to communicate with me in English with few Spanish words all the time for me to remember.” (P2). ChatGPT and like any other tool, can be used for language learning, the participant wants to learn Spanish and made chatGPT incorporate by borrowing Spanish words for them to memorize the vocabulary of the language.

3.5. Document Analysis results

As outlined in chapter two, the documents were read thoroughly and organized accordingly to the thematic analysis’ process. The themes are discussed below are supported by illustrative excerpts.

3.5.1. AI Application in Multilingual Education

AI is being widely used, especially in education as a facilitating tool. “AI applications represent modern technologies with immense potential to enhance the learning experience and educational quality” (Kaci, 2024, p. 590). This perspective notes a positive outline for the education system, acknowledging the modern technology potential. “AI tools foster student involvement by catering to diverse learning styles and providing valuable insights for informed decision-making in curriculum design and resource allocation” (Djouiba, 2024).

These insights high-lights how AI promotes a potential enhancement in learning and education through the evolving tailored and designed approaches. “There is evidence that automatic speech recognition technology could help reduce learners’ anxiety about speaking in public” (Edmett, et al., 2024). It is safe to say that AI application in education is positive according to the documents.

3.5.2. Ethical and Practical Challenges of AI

The documents data also acknowledge the obvious and significant challenges in the process of implementing AI in educational practices. AI capacity in being diverse is limited to a certain extent due to how language is crucial and always changing. “The increasing integration of AI in the education sector relies on stronger partnerships between governments and heightened investment, driven by the demands of the modern era” (Kaci, 2024, p. 599). In order to overcome the challenges that may influence AI’ effectiveness, a great investment is highly recommended with a governmental ethical approval. “Ensuring ethical AI use is crucial for maintaining trust. To fully harness AI’s potential” (Djouiba,2024)

3.5.3. Multilingual Learners’ Experiences and Needs.

At last, AI is providing a positive impact on learners and education. Though, it may be limited, mainly, due to the language barriers across the word. As outlined above in the interview data, students’ experiences and needs differs from to another. However; the majority of responses relate to AI inability in some cases about how AI does not understand dialects, and how it doesn’t provide cultural translation “The issue of algorithmic fairness and biases has been noted in machine-learning research” (Edmett, et al., 2024). According the documents AI is still far away from being a perfect tutor for learners because of these obstacles. “If AI could overcome many or all of these problems, it would bring significant change to ELT classrooms and, further down the line, English language learning outcomes” (Edmett, et al., 2024). “Lack of Problem Clarity: AI requires clear objectives to deliver useful results, which depends on clearly defining and specifying tasks” (Kaci, 2024, p. 597). To be understood is one of the most important aspects in a path of a learner and AI may fail at times to provide these needs.

3.6. Discussion of the Main Findings

The research is a complex phenomenon that was chosen carefully for a master degree. There is an intricate relationship between individuals and these evolving AI tools. Taking multilingual students into consideration, over the last few years, particularly, after the pandemic. Students started utilizing AI often which raised questions about the over usage and the probability of reducing cognitive engagement. A questionnaire was used to approach students and highlight their perception of AI without influencing their responses in a non-coercive manner. Then, the semi structured interview was applied with a potential knowledge from the questionnaire to engage more deeply with the selected students and as for the documents data, they mainly emphasized more on the interview findings. Reflecting on the main aim for this research, three questions were raised:

- Do AI- powered language tools have an impact on students' multilingual practices?
- How AI-powered language tools affect students' multilingual language perception?
- What is affected when multilingual students learn through empathy that isn't human?

The students do obviously use AI tools for study purposes, as the previous data showed. All participants admitted on using AI for study purposes which of course led to the arising concerns about AI impact on their practices. Whether the impact is positive or negative, the results reflect the respondents' perspectives as indicated by the questionnaire data. Notably, most of students reported using AI tools such as ChatGPT, Deepseek, and Grammarly…etc. And this pattern of usage indicate that these digital tools permeate major academic tasks; from summarizing complex texts and translation to helping students in academic writing and test revision, promoting AI as a mediate artifact (Vygotsky, 1978) as previously noted in the theoretical framework.

Through these mediating technological artifacts, students can engage in cross-linguistic practices such as code-switching, multilingual academic wring, and certainly translation. As a result, the students' functional repertoire will keep expanding in multiple languages.

A significant proportion of results showed that participants prefer using language blending between English and Arabic during their engagement with AI. Though, the majority reported of using mainly English in AI interactions, and a small part of participants reported of using the three languages together Arabic, English, and French in a translingual engagement. Though, this is a sustained linguistic diversity with clear bias towards English compared to the other two languages.

The reason why English is the dominant language is probably due to the fact that students are English major and also to how AI systems memorize English as the globalized language. While investigating these findings, a resonation with prior literature was explored. Digital tools are perfectly capable of supporting multilingual competence as well as creating a risk of marginalizing the less dominant languages (Androutsopoulos & Juffermans, 2014). Back to the present findings, AI tools privilege dominant languages like English in this context. In form of answer for the first research language. Yes, AI tools may impact multilingual students' practices by enabling interactions in multiple languages by supporting the multilingual tasks (translation, writing, summarizing). The Pie-Chart 3.5 addresses whether students AI as a replacement for traditional learning and as showed in the results. Most of students do not see AI as a replacement learning method at all, while the other half are neutral to this matter and the small group left are unsure and uncertain about how to feel.

These mixed answers suggest that AI is definitely accepted as a learning tool, thereby, it's a balanced perception of its role. These results reflect the critical awareness of human-guided learning. Students admit to using AI, they perceive AI as a valuable modern adjunct of their learning path, but not an all-encompassing solution.

Additionally, in the findings of (Pie-Chart 3.8) indicate that most of the students perceive AI' impact as positive reflecting the latter as an aid, a tool, a mediator rather than a replacement while also a clear awareness of AI' limitations. As for the answer of second research question, based on students' experiences. In (Bar-Graph 3.3), students reported a good estimate on how AI handle multilingual tasks for them with a low percentage reported that they face difficulties and limitations of using AI, these findings align with Self-Determination Theory (Deci & Ryan, 2000). All that included; AI is perceived in a balanced and logical pattern for its role in multilingual learning due to how AI employ a user-friendly and helpful system.

This study does not explicitly investigate AI' lack of empathy but it still tackled AI effect on cognitive engagement and how students are influenced. For instance, students using AI tools for translation, paraphrasing, revision…etc. (Pie-Chart 3.7). The findings

reflect a simulated empathy as these tasks done by AI reduce learning anxiety and most definitely foster task engagement as well as improving perceived competence. To summarize, AI mimics human empathy with a similar aim; proper feedback/ language learning (Mercer & Dornyei, 2020). Additionally, based on students' answers, they do not feel disempowered or heavily dependent on AI despite its constant availability. Instead, when AI provides incorrect translations, inaccurate information or complex terminology; students may get frustrated and their trust get reduced which would emerge a lesser engagement by each passing interaction. Therefore, to answer the third research question; when the student learns through non-human empathy, their motivation, engagement, confidence…etc. Are mostly positively affected. On the other hand, when AI deliberately provide false information which means the failure of this simulated empathy; the trust and satisfaction of the student get reduced and it can be negatively impacted.

The analysis of the five categories resulted from the questionnaire were explicitly explained in order to answer the research questions. Yes, AI impact multilingual students' practices in mostly balanced perceptions, and also affect motivational and emotional dimensions of learning in both positive and negative manner and that depends on the language bias and accuracy, memory limitations.

The interview and document data are a follow set that complement the nuanced understanding of the questionnaire's data. The first theme emerged from the interview directly respond to the first research question. The data confirm that AI systems have become integral to participants' academic routines. As previously mentioned, five participants were selected for the semi-structured interview, and three out of five participants declared that AI work as a facilitating tool that increase their autonomy and fasten information retrieval.

This relates to the questionnaire findings with extra and deeper insights into AI' benefits. The two sub-themes of the first theme; illustrate different findings. As a starter in the sub-theme AI Enhances Vocabulary & Grammar, participant 1 described how AI' feedback (ChatGPT) improved their grammatical level while also revealed unnoticed weaknesses in the coherence range and this once again reflect back to Vygostky' Zone of Proximal Development (1978). AI tools are versatile and participant 2's experience was acknowledged because AI supported their desire to speak the British English fluently; in terms of speaking and writing. However, the second sub-theme of Skills. Atrophy Risks' findings were counterpoint to the previous sub-theme. Three participants, particularly, participant 3 expressed their concern on over-reliance on AI with fear of becoming lazy and less productive.

This phenomenon is not outraged but relate with an existing theory, the cognitive offloading theory (Risko & Gilbert, 2016). Participants also noted the wide bridge between their academic writing and AI robotic output. Yes, AI may enhance students' linguistic proficiency but also may attenuate independent language mastery. These findings confirm that AI tools may introduce pedagogical risks even with the enhancement that occurs during the usage of these tools. A balanced use is essential to avoid skills' issue.

The second theme mentioned in this chapter enriches a nuanced understanding of students' perceptions of AI's role in sensitive language learning. The cultural aspect was not mentioned that often in this paper in general and much less in the questionnaire. However; it was explored deeply during the interviews while also reflecting the context of the second research question. Participant 2 was convinced that AI does not provide an accurate translation at all while participant 4 claimed that AI does not respect cultural multilingual meaning-making; such patterns as idioms, pragmatics, and context- dependent meanings. Both participants'

observations align with the dynamic equivalence theory (Nida, 1964), to explain more; this theory emphasizes on the effective translation and how it requires deep cultural insight, thereby, as clearly indicate, AI models struggle to provide cultural translation in multilingual meaning-making. The sub-theme AI in Code-Switching further explore AI struggle in cultural competence. P5 reported that AI provides a fast understanding towards instructed, natural, and spontaneous code-switching. For the record, this is a deficient pragmatic competence that humans effortlessly deploy reflecting the ideological values of bilingual behavior (Auer, 1998). In summary, AI is still incapable of navigating cultural meaning-making and students are vigilant about this matter and this go directly to their perception of AI' pedagogy.

Two sub-themes emerged in the final theme that speaks directly to the third research question; investigating how the stimulated empathy may create a safe linguistic space allowing freedom for creativity and language play to be on display. For the record, the findings addressed how AI foster a psychological, and linguistic save and inclusive save environment. According to the participants, AI systems are non-judgmental interlocutors that promotes advanced creative writing, plot twists, and idea generation. P4 spoke of their passion for fiction writing and they claimed that AI chatbots fosters a wonderful experience for them. P3 response was rather creative as they confessed of using ChatGPT in choosing their thesis topics. These findings reflect the intrinsic motivation (Deci & Ryan, 2000).

AI fosters responsive interaction in language play by switching languages accordingly to the user' preferences. The safe space afforded by AI may not promotes high-academic writing skills. Though it helps to reduce social anxiety (Warschauer, 1996). AI have advantages and limitations making human feedback indispensable. Overall, both the interview and the questionnaire data revealed AI as an enhancement tool in language skills but also posing the risks of over-reliance and skills atrophy. AI tools are valued in multilingual engagement, but also distrusted due to the issue of limitations in cultural meaning-making and the natural flow of code-switching. Furthermore, these tools promote creative expression and as mentioned, linguistic safety, making the stimulated empathy a supporter towards enhancing motivation and confidence. Collectively, these insights highlight how AI tools reshape multilingual learning while also enhancing practices and perceptions but under certain conditions.

The findings also acknowledged AI limitations while the three documents implanted emphasized more on the interview themes with rich professional quotes.

The researcher believe that the results were expected to some extent. The collected data from students showed how much the use of AI tools has improved their learning outcomes in the best way possible way for some while some other students according to the findings, AI is a tool that does not have a major impact on them. The remaining results and according to the researcher; some students believe that AI is reducing their cognitive process in terms of learning and using languages.

The researcher aim is to prove that there is no direct and standard answer to this phenomenon. AI's impact differs greatly from a student to another.

3.7. Conclusion

This is the last chapter of this paper in which the findings were analyzed and discussed with the aim to achieve an understanding of the research hypotheses while also answering the research questions solely based on the students' provided data which resulted into a nuanced understanding of the research topic showing a striking diversity in AI's role in multilingual students' practices. Most students showed a high awareness towards AI tools and their influence in terms of mastering or hindering while learning.

As a matter of fact, most students agreed upon AI being a facilitating tool for study purposes with various limitations that includes empathy, spontaneous language play. That being said, many students reported improvement in their linguistic abilities but also the lingering fear of over-reliance and becoming less productive. As gathered from the results, AI in a multilingual learning environment can use some improvements such as deeper contextual understanding (as previously mentioned).

AI should move beyond simple word-for-word translation and grasp the complex patterns, including cultural references, idioms from different languages and not only deal with the dominant languages, and implied meanings across different languages which is similar to

idioms but different at the same times. Since, implied meanings deal with pragmatic context of a situation (age, gender, country…etc.). As for what confirmed from the findings, AI can replace traditional learning methods since its still in an evolving path with struggle of limitations, thereby; the non-human empathy is a tie of being a good influence or a bad one. Though, one thing for sure, is that AI should be used in moderation, in a balanced manner to avoid the risk of over-reliance and the risk of reducing cognitive engagement by automating linguistic processing, potentially weakening critical thinking, problem solving skills, and active language learning.

General Conclusion

General Conclusion

This research has explored the complex relationship between artificial intelligence (AI) tools and their role in language learning within the context of Algerian higher education. Across the three chapters, a combination of theoretical frameworks and empirical investigations has been employed to address the research objectives and provide a comprehensive understanding of the phenomenon under study.

The first chapter established the theoretical foundation of the research by engaging with several key perspectives that illuminate the integration of technology in language education. Sociocultural theory provided a lens for understanding how interaction and mediation, facilitated through AI tools, support language acquisition in socially situated contexts. Self-determination theory offered insights into how main aspects like motivation, autonomy, and competence are influenced by the introduction of AI in academic settings, particularly in relation to students' engagement and self-regulation. The application of triangulation theory justified the methodological approach of combining multiple instruments and sources of data, ensuring greater validity and reliability in the research outcomes. Furthermore, affordance theory was used to conceptualize the possibilities and constraints that AI tools present to learners, emphasizing how technological features shape learning opportunities. These theoretical perspectives collectively framed the empirical inquiry and guided the interpretation of the research findings**.**

The second chapter detailed the methodological procedures undertaken for data collection, emphasizing the use of a questionnaire and semi-structured interviews. The questionnaire served as an effective instrument for gathering quantitative data on students' familiarity with, usage of, and attitudes towards AI tools, enabling a broad understanding of trends and patterns within the sample population; 45 students selected from three academic year levels.

General Conclusion

Complementing this, the semi-structured interviews provided qualitative depth, capturing rich, individual insights into students' experiences, perceptions, and reflections on AI's role in language learning. Document analysis interpreted an already exsisting data, this tool was used alongside survey and interviewing. The choice of these three instruments aligned with the principles of triangulation, allowing for the convergence of different types of data and enhancing the study's overall rigor and credibility. Each instrument was carefully designed, administered, and analyzed to ensure methodological transparency and coherence.

The third chapter focused on the presentation, analysis, and discussion of the research findings. The results were systematically presented through chart-pies, chart-graphs, and a table to address the relation with the research questions. Descriptive narratives offered a clear and comprehensive account of the collected data. Thematic analysis offered a deeper and more complex understanding of the collected data. Following the presentation, an in-depth discussion interpreted the findings in relation to the theoretical frameworks and existing literature introduced earlier and even discovering new theories which were linked with the findings.

Particular emphasis was placed on understanding how students' interactions with AI tools reflected elements of motivation, social mediation, and technological affordances. In summary, this research was done to conduct understanding from the student's perspective on AI and how it influences them. The discussion also addressed areas of convergence and divergence between the quantitative and qualitative data and why they were chosen specifically, to provide a nuanced analysis of students' attitudes, benefits perceived, and challenges encountered when using AI tools in their academic practices and that what have been addressed and discussed.

To summarize, this research contributes to the ongoing discourse on artificial intelligence in language education, while also tackling other aspects by offering both theoretical and empirical insights from an underrepresented local context.

General Conclusion

Through the integration of multiple theories, a robust mixed-methods design, an examination of the findings, and a critical discussion of the results, the study offers a comprehensive examination of how AI tools shape language learning experiences and at the end of third chapter, the research questions were answered solely based on the participants' experiences and the findings were presented in a structured order to provide a clear understating of the aim of this paper. These findings not only advance academic understanding but also inform pedagogical practices and future research directions in the evolving landscape of AI-supported education, mainly in multilingualism.

Additionally, this research is evaluated and supervised, within a short timeframe, limiting access to conducting an inquiry on different AI applications that surely has unique algorithms and features contrasting others, therefore making the comparisons problematic and thereby limiting the ability to assess long-term cognitive effects. While these limitations may narrow down the. scope presented, this research provides valuable insights into the role of AI in multilingual learning and its potential effects on cognitive development.

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Appendices

Appendix “A”

This section shows the questionnaire applied for the descriptive statistics

1. What is your current year level?

Mark only one oval.

- ◯ L3
- ◯ M1
- ◯ M2

2. Which language do you prefer speaking?

Mark only one oval.

- ◯ Arabic
- ◯ English
- ◯ French
- ◯ Depends

3. Do you think AI tools should be integrated into English courses?

- ◯ Yes
- ◯ No
- ◯ ma
- ◯ other

4. Have you ever used any of AI tools (ChatGPT, Google Translate, DeepL…etc.) for academic purposes?

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Not sure

5. Which AI tool have used for academic purposes?

Mark only one oval.

- ◯ ChatGPT
- ◯ Grammarly
- ◯ Deep seek
- ◯ Chatbots
- ◯ I don’t use AI tools for academic purposes
- ◯ Other: _____

6. For what academic purposes do you use AI tools?

- ◯ Translating between languages
- ◯ Writing academic paragraphs
- ◯ Revision for tests and exams
- ◯ Summarizing and understanding complex texts
- ◯ Other: _____

7. How frequently do you use AI tools for academic purposes?

1 2 3 4 5

☆ ☆ ☆ ☆ ☆

8. Which language do you use while engaging with AI tools?

- [ ] Arabic
- [ ] English
- [ ] French
- [ ] Arabic and French
- [ ] Arabic and English
- [ ] French and English
- [ ] All three
- [ ]

9. How well do AI tools handle multilingual tasks for you? (e.g., translation tasks immediate switch between languages…etc.)

1 2 3 4 5

Very ○ ○ ○ ○ ○ Very well

10. Do you think AI tools positively or negatively affect your independent learning?

- ○ Positively
- ○ Negatively
- ○ No significant effect
- ○ Other: _____

11. What are the problems you face when using AI?

12. Do you believe AI can replace traditional language learning methods (e.g., teacher-led classes)?

- Yes
- No
- Partially

13. What improvements would you suggest for AI tools to better assist multilingual * students like yourself?

14. How has AI influenced your motivation to learn English?

Appendix "B"

This is the transcript of the interview done to gather data from five different participants:

Participant 1:

Q1: How often do you use AI in your studies?
A1: Uh...Just in my studies? I mean who doesn't use AI nowadays? For my studies, I use ChatGPT and other popular AI when exams are approaching because the personalized instruction provided enhancement to my grammar, particularly in essay writing.

Q2: Does using these tools influence your grades?
A2: Duhh, I just told you these tools enhanced my grammar and my essays are just perfect now.

Q3: What the most thing you like about AI?
A3: Hahaha... There are many things I like about AI to be honest but if I had to pick, I would say how it made me improve in many ways. I always thought the reason why I'm not improving in essay writing was because of my grammar, but while using ChatGPT, I realized that I struggled with the flow of writing too, ChatGPT was the one who pointed it out.

Q4: Which language do you prefer using while interacting with AI?
A4: English, duhh! I don't like Arabic and ChatGPT doesn't really speak good dialect and I always enjoyed speaking English but the words I used were more slang, and I realized that even my vocabulary was limited while chatting with chatbots.

Q5: If you were to change one thing about AI what would it be?
A4: I would obviously want to make it free!!!

Q6: Do you consider AI as tutor or just a tool?
A6: Definitely just a tool, haha, a teacher wont spit lies like ChatGPT do with confidence.

Q7: Do you think AI can compete against traditional teaching methods?
A7: To some level, yeah. Don't get me wrong, traditional methods are the standard for learning but these methods are way limited for students like me. I'm not dumb, I just had few problems that traditional methods didn't help me acknowledge them.

Q8: Have you noticed some changing in how AI respond based on your form of questioning?
A8: Yes!! I have to be extremely detailed about what I want otherwise its won't really give me the answer I want.

Q9: Can you share an experience with AI that influenced your learning?
A9: Definitely!! So, as I mentioned I use AI to improve my writing and grammar so sometimes I blend languages in using AI because sometimes I forget words from one language and ChatGPT understand what I'm trying to say.

Q10: Can you share an experience where AI wasn't a help?
A10: Yeah, probably in code switching as I told you earlier so like uhh…one time I needed to translate a text to French but AI didn't just translate the text but it started answering my other questions in French. As much as I prefer blending languages in utilizing AI, sometimes I receive responses with just one language which make the flow of my request difficult for AI tools to understand.

Q11: How do you perceive the role of teachers when AI tools are used in education?
A11: Tough question, really, haha. I guess teachers are teachers for a reason and AI tools are just tools for a reason if you know what I mean.

Q12: What would you suggest for AI to improve?
A12: Memory because AI forgets a lot and some acknowledgment to a better code-switching.

Participant 2:

Q1: How often do you use AI in your studies?

A1: Not that often just to revise for exams sometimes and outside of studies, I love the option of being able to call ChatGPT, I would talk for hours to improve my fluency, particularly in British English.

Q2: Does using these tools influence your grades?
A2: No, not really.

Q3: What the most thing you like about AI?
A3: probably fast feedback, for me AI is like an improved Wikipedia.

Q4: Which language do you prefer using while interacting with AI?
A4: English and that for two main reasons; firstly, because I'm an English major and the second reason is that AI is biased on English.

Q5: If you were to change one thing about AI what would it be?
A5: The made-up sources, fake information, and sometimes even stupid illogical answers.

Q6: Do you consider AI as tutor or just a tool?
A3: I consider AI overrated, think of it as you like.

Q7: Do you think AI can compete against traditional teaching methods?
A7: Absolutely not!

Q8: Have you noticed some changing in how AI respond based on your form of questioning?
A8: Yes, based on my experience with AI you should provide as many details as you can for it to answer properly.

Q9: Can you share an experience with AI that influenced your learning?
A9: I have set my chatGPT to communicate with me in English with few Spanish words all the time for me to remember.

Q10: Can you share an experience where AI wasn't a help?
A10: AI translation tools work to a certain degree, otherwise it doesn't accurately convey the intended meaning so it that not much of help in linguistic diversity.

Q11: How do you perceive the role of teachers when AI tools are used in education?
A11: Teachers should stop saying that AI is ruining learning because that not true at all.

Q12: What would you suggest for AI to improve?
A12: Stop asking for money when you are not even that improved yet.

Participant 3:

Q1: How often do you use AI in your studies?
A3: pretty often that it's a bit concerning and I'm well aware of that.

Q2: Does using these tools influence your grades?
A2: Yes, AI influenced my grades.

Q3: What the most thing you like about AI?
A3: The sense of acknowledgment? Like AI is customized like I want it to be.

Q4: Which language do you prefer using while interacting with AI?
A4: English and French.

Q5: If you were to change one thing about AI what would it be?
A5: Diversity and more acknowledgement to different cultures.

Q6: Do you consider AI as tutor or just a tool?
A3: I see it as my tutor and it concerning, because the more we rely on AI, the more it makes us lazy and less productive

Q7: Do you think AI can compete against traditional teaching methods?
A7: Yes, we are in the modern era so different from all the eras before. I had ChatGPT help me choose my topic's thesis for me by requesting originality, rarity, and creativity and I think that goes against traditional teaching methods but that what suits me best, honestly.

Q8: Have you noticed some changing in how AI respond based on your form of questioning?

A8: I'm not sure, I think sometimes it's goes overboard with details so I always tell him to give me short answers.

Q9: Can you share an experience with AI that influenced your learning?
A9: As students we don't realize that we have broken grammar until we submit an essay written by ChatGPT and the teacher immediately could tell that it's not our work. That was really a bad experience but also made me aware of my skills.

Q10: Can you share an experience where AI wasn't a help?
A10: I think I will just go with the experience of AI submission I told you about.

Q11: How do you perceive the role of teachers when AI tools are used in education?
A11: I'm an introvert, I don't like talking and teachers hate that during class. On the other hand, AI tools don't criticize me for that.
Q12: What would you suggest for AI to improve?
A12: More privacy? I've heard that AI steal data.

Participant 4:

Q1: How often do you use AI in your studies?
A1: For study purposes I use it in moderation.

Q2: Does using these tools influence your grades?
A2: Yup! Sometimes I memorize essays done by AI then I get good grades.

Q3: What the most thing you like about AI?
A3: hmm, growing up, I used to enjoy writing fiction and chatbots have made me enjoy writing fiction again as an adult.

Q4: Which language do you prefer using while interacting with AI?
A4: While studying English, outside of studies, I use Spanish because I'm learning it.

Q5: If you were to change one thing about AI what would it be?

A5: Hmm, Frankly, AI does not respect cultural multilingual meaning-making so I guess I want it be less stereotype if that makes sense.

Q6: Do you consider AI as tutor or just a tool?
A3: Tutor?? Noooo, a buddy at best!

Q7: Do you think AI can compete against traditional teaching methods?
A7: Haha nice joke that is slowly turning into reality even if some people don't like it.

Q8: Have you noticed some changing in how AI respond based on your form of questioning?
A8: Not really, no.

Q9: Can you share an experience with AI that influenced your learning?
A9: As I told you in writing fiction with AI, I swear I learned so many new words.

Q10: Can you share an experience where AI wasn't a help?
A10: One time I was scrolling on my phone and a word catch my interest, so I asked google translate, it gave me a completely different meaning compared to what the word actually meant and that frustrating to say the least.

Q11: How do you perceive the role of teachers when AI tools are used in education?
A11: The same, I don't rely too much on AI for studies.
Q12: What would you suggest for AI to improve?
A12: Memory, please fix the memory!!!

Participant 5:

Q1: How often do you use AI in your studies?
A1: I would say pretty often because I like AI.

Q2: Does using these tools influence your grades?
A2: No, my grades are stable because of my own way in studying.

Q3: What the most thing you like about AI?

A3: Sometimes, I try to send a vocal message to AI and I'm often in loss of words in English, so I include French and Arabic then ask it to only me in English which basically means that AI is personalized how I like it to be.

Q4: Which language do you prefer using while interacting with AI?
A4: I'm francophone so I interact with it in French and I tell it to answer me in English.
Q5: If you were to change one thing about AI what would it be?
A5: For it to stop sugarcoating, lol. And yeah, stop asking for money after just three documents uploaded.

Q6: Do you consider AI as tutor or just a tool?
A3: Maybe Deep-Seek, I love it and its free.

Q7: Do you think AI can compete against traditional teaching methods?
A7: I don't think I'm educated enough to comment on such a thing but I guess AI is just evolving more and more so maybe? Not sure though and honestly as a student I'm neutral about it.
Q8: Have you noticed some changing in how AI respond based on your form of questioning?
A8: I have to plead or scold it like literally with ChatGPT its either please, please, please!!! Or…Haha, I won't tell you how I scold it.

Q9: Can you share an experience with AI that influenced your learning?
A9: No, no influence at all I still struggle to speak fluent English because my accent is so French like, I would love it if there is an AI that studies accents and teach how a student like me can come over it.

Q10: Can you share an experience where AI wasn't a help?
A10: I prefer using Gemini for text writing, but the experience could be considered as average due to how if I switched between languages with just one word, it would answer me with the language I used for that one word. So, again I would say Deep-Seek.

Q11: How do you perceive the role of teachers when AI tools are used in education?
A11: What was the word again? Ah! Monitors!

Q12: What would you suggest for AI to improve?

A12: Proved document analyzing and enhanced translation.

“Appendix C”

This appendix contains documents that are analyzed and themed in chapter 3

“Higher education in Algeria is among the vital sectors undergoing continuous transformations aimed at development and modernization amidst contemporary demands and trends that necessitate innovative and effective educational models. In this context, technology and artificial intelligence (AI) applications emerge as essential tools to enhance educational strategies and improve the quality of education within Algerian universities.” This excerpt was taken from the document of Kaci, Y. (2024). The Role of Artificial Intelligence Applications in Enhancing Educational Strategies in Higher Education in Algeria. Research and Studies Journal, 13(2), 589-601. Which inspired the path of the selected themes concerning the data collection.

“This report examines three sources of evidence. First, a systematic review of the last 10 years of research on AI in ELT, taking us into early 2024. It then looks to the field, capturing the views of people impacted by these AI technologies. In the global teacher survey, 1,348 teachers from 118 countries and territories reveal how they are using AI and how they feel about the changes it’s bringing”. This excerpt is from Edmett, A., Ichaporia, N., Crompton, H., & Crichton, R. (2023). Artificial intelligence and English language teaching: Preparing for the future. British Council.

“It is crucial to address the challenges associated with AI implementation, such as potential biases, privacy concerns, and the need for reliable data. Ensuring that AI systems are transparent, equitable, and accessible will be essential in maximizing their benefits. Furthermore, ongoing professional development for educators is necessary to equip them with the skills needed to effectively utilize AI tools in their teaching practices. Ultimately, while there are hurdles to overcome, the potential of AI to revolutionize education is immense. By embracing AI-driven personalized learning, we can create a more inclusive and effective educational environment that supports every student's journey toward success.” This excerpt was taking from Djouiba, C. (2024). Transforming Primary School Education in Algeria through Artificial Intelligence: Enhancing Personalized Learning and Addressing

Challenges. *Atras Journal*, *5*(Special Issue), 226-235. The three excerpts from the three documents were an inspiration for the themes' emrge.

Summary

ملخص

هذه الدراسة هي تحقيق في دمج الذكاء الاصطناعي في تعلم اللغات، وبشكل خاص في التعليم. قامت الدراسة بتحديد نطاق تأثير وأثر الذكاء الاصطناعي على ممارسات وتصورات الطلاب المتعددين اللغات. لذلك، فإن الغرض من هذا البحث هو محاولة تقديم قاعدة واضحة ودقيقة للظهور الطبيعي للنظريات من خلال دراسة عينة معينة من الطلاب المختارين. تم تطبيق استبيان، ومقابلة شبه منظمة، وتحليل وثائق لتفسير البيانات لتعكس الفرضية. أظهرت نتائج البحث اتجاهات تجاه الذكاء الاصطناعي وطرق التعلم؛ هذه المنطقة بحاجة إلى مزيد من البحث

***الكلمات المفتاحية*:** الذكاء الاصطناعي، الطلاب اللغات، تعلم اللغة، طرق التعلم، تأثير الذكاء الاصطناعي

Summary

This research is an investigation of AI integration in language learning, particularly, in education. The research conducted the scope to AI' influence and impact on multilingual students' practices and perceptions. Thus, the purpose of the present research is an attempt to put forward a neat and clear ground for theories to emerge naturally. A questionnaire, semi-structured interview, and document analysis were applied to interpret the data to reflect the hypothesis. The results of the research conducted attitude towards AI and learning methods; this area is in a need of further research.

Keywords: AI, multilingual students, language learning, learning methods, AI' impact

Resume

Cette recherche est une enquête sur l'intégration de l'IA dans l'apprentissage des langues, en particulier dans l'éducation. La recherche a examiné l'influence et l'impact de l'IA sur les pratiques et les perceptions des étudiants multilingues. Ainsi, le but de la présente recherche est de tenter de poser un cadre clair et net pour que des théories émergent naturellement. Un questionnaire, des entretiens semi-structurés et une analyse documentaire ont été appliqués pour interpréter les données afin de refléter l'hypothèse. Les résultats de la recherche ont révélé des attitudes envers l'IA et les méthodes d'apprentissage ; ce domaine nécessite des recherches supplémentaires

Mots-clés : IA, étudiants multilingues, apprentissage des langues, méthodes d'apprentissage, impact de l'IA