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A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts in the Didactics of English

Exploring Teachers' and Students' Perceptions on Artificial Intelligence Integration in EMI classrooms
The case of Bordj Bou Arreridj University

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ABSTRACT

Algerian higher education culture today is significantly influenced by the recent national move towards English as a Medium of Instruction (EMI) and the simultaneous emergence of Artificial Intelligence (AI) technology. This changing learning environment demands a complete understanding of stakeholders' assumptions about the application of AI to address EMI issues. This study explores teachers' and first-year students' perceptions regarding the use of AI in Mohamed El Bachir El Ibrahimi University classrooms, with a focus on its associated benefits and concerns. Using qualitative research methods, data was collected comprehensively through questionnaires completed by a sample of 120 students from four faculties (Science & Technology, Life and Natural Sciences, Mathematics and Computer Science, and Law & Political Science), as well as semi-structured interviews with 7 EMI teachers. Findings indicate strong usage of AI tools by students with 94.2% reporting their usage, primarily for vocabulary improvement, improved comprehension due to explanations based on individual strengths, gaining confidence, and saving time. The study also, however, presents the highest concerns, including validity and consistency of AI-generated content, over-reliance on AI and resultant erosion of cognitive capacities—a concern which finds considerable support from the perspective of teachers—and practical technical concerns like availability of internet. Disciplinary diversity was notable, with Mathematics and Computer Science students expressing a refined preference for traditional sources of information in anchor concept work, challenging traditional assumptions about technology use in STEM. This research presents valuable insights into the pragmatic success and ethics of AI deployment within the upcoming EMI economy in Algeria and the necessity for tailor-made institutional systems to unleash AI's revolutionary potential without its attendant risk.

Keywords: English as medium of instruction (EMI) , Artificial Intelligence (AI), students' perceptions, teachers' perceptions, benefits,concerns, higher education.

Dedication

First and foremost, all praise and gratitude belong to Allah , the Most Merciful and Compassionate .

To my precious father, who left this world too soon but never left my heart - I still feel your presence in every difficult moment, still hear your voice saying "you can do this." You worked so hard for me, sacrificed so much, and though you're not here to see this day, I know you're proud. This degree is the harvest of seeds you planted with your lifelong sacrifices. I pray it reaches you in Jannah, wrapped with all the love I can no longer give you in this life. I love you so much .

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To Aya , Ryma and Seryn , the best thing that university gave me , the ones who stood by me with kindness and inspiration, your presence made this journey brighter. Thank you for the unforgettable memories.

Meryem

Dedication

First and foremost all praise and thanks be to ALLAH.

i would like to take this chance to show my love and appreciation to my **mom** at first without her i wouldn't be where i am standing today no words can describe what i feel towards her how she sacrificed everything for me truly a women that stand toe to toe with a mountain, also a huge thanks to each and everyone of my family my **sisters** and my **brother**. And lets not forget another woman whom I consider in the word mom" **mama Djamila"** who treats me with nothing but a son, and her son who the word friend doesn't do him justice, **Racim** i truly consider you as my brother and thank you for everything through the years. Last but not least I would like to give huge thanks to my partner **Meryem** for everything too, from hard work and help throughout the year, truly one of a kind. Also I would like to thank everyone of my friends and the ones who this university gave me the pleasure to meet and know.

Tamim

Dedication

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ELHAMDULLILAH

Wissem

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الذي يحدد القواعد المتعلقة بالوقاية من السرقة العلمية ومكافحتها

1

روابح عادل

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي والبحث العلمي

مؤسسة التعليم العالي والبحث العلمي:

نموذج التصريح الشرفي

الخاص بالالتزام بقواعد النزاهة العلمية لإنجاز بحث

أنا الممضي أسفله،

السيد(ة): بوطاهر وسام الصفة: طالب، أستاذ، باحث ....طالبة....

الحامل(ة) لبطاقة التعريف الوطنية رقم: 4.4413.5307 والصادرة بتاريخ ...2025/01/23 بحسناوة...

المسجل(ة) بكلية / معهد ...الآداب واللغات... قسم ...اللغة الإنجليزية...

والمكلف(ة) بإنجاز أعمال بحث (مذكرة التخرج، مذكرة ماستر، مذكرة ماجستير، أطروحة دكتوراه).

عنوانها: Exploring teachers' and students perception on artificial intelligence integration in EMI classrooms "Case of B.B.A University"

أصرح بشرفي أني ألتزم بمراعاة المعايير العلمية والمنهجية ومعايير الأخلاقيات المهنية والنزاهة الأكاديمية المطلوبة في إنجاز البحث المذكور أعلاه .

التاريخ: ..... 23 جويلية 2025

توقيع المعني (ة)

توقيع السيد (ة): ....
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صادرة بتاريخ: ....
عن: ....
حسناوة: ....

عن رئيس المجلس الشعبي البلدي
وبتفويض منه
رئيس مكتب الحالة المدنية
نور الدين بن النوي

23 جويلية 2025

List of Acronyms and Abbreviations

EMI	English as medium of instruction
FMI	French as medium of instruction
ELF	English as lingua Franca
LF	Lingua franca
HE	Higher education
MOI	Medium of Instruction
Q	Question
ST	Science And Technology
LS	Nature and Life Science
MCS	Mathematics and Computer Science
LP	Law and Political Science
MESRS	Ministry of Higher Education and Scientific Research

Liste of tables

Liste of Figures

Table of Contents

General Introduction

General Introduction :

The worldwide trend of English as a Medium of Instruction (EMI) in higher education aligns with the global hegemony of the English language and academic scholarship, science, and technology making it a vital asset for internationalization (Macaro, 2020). In Algeria, this shift gained traction with the July 2023 decision from the Ministry of Higher Education, which enacted an official policy change to EMI with the intent of replacing French as the language of instruction (MESRS, 2023; Ghammi, 2019). This change is aimed at improving the competitiveness of the graduates in the global market and international benchmarks. Nevertheless, systemic EMI obstacles are commonplace due to a lack of sufficient teaching staff, obsolete training materials, a lack of adequate English proficiency among students, and insufficient English for specific subject mastery (Ouarniki, 2023). These problems create the need to devise novel approaches to ensure that effective EMI transition is possible without lowering the standard of education provided—this is a realm where Artificial Intelligence (AI) technology could make a difference.

At the same time, AI presents new opportunities for educational innovation by offering personalized learning paths, automating assessment tools, and facilitating interaction through translation services (Zawacki-Richter et al., 2019). In the context of English as a Medium of Instruction (EMI), AI technologies like intelligent tutoring systems and real-time translators can help mitigate linguistic barriers, enhance student participation, and aid instructors in content delivery (Chen et al., 2020). Regardless of the increasing attention given to the role of AI in education, very few explore stakeholder views concerning the use of AI in EMI, especially in newly evolving contexts such as Algeria. This research aims to investigate the views of the pedagogical stakeholders from Mohamed El Bachir El Ibrahimi University on the use of AI in EMI, focusing on the disparity between STEM and Law disciplines in Algerian higher education. With this focus, the study hopes to elucidate the potential advantages, challenges, and risks posed by Artificial intelligence in the Algerian higher education system.

Purpose for research

This study aims to investigate teachers' and students' perceptions of Artificial Intelligence (AI) integration in English-medium instruction (EMI) classrooms across STEM and Law faculties at Mohamed El Bachir El Ibrahimi University. The research examines both the perceived benefits and concerns regarding AI adoption, with particular attention to how disciplinary contexts shape these attitudes and their implications for pedagogical practice in Algerian higher education. To achieve this aim, the study will address the following specific objectives:

1. To explore the perceptions of teachers and students of BBA University, regarding the integration of Artificial Intelligence (AI) in English as a Medium of Instruction (EMI) classrooms.

2. To investigate the perceived benefits and concerns associated with AI adoption in EMI teaching and learning processes.

Research Question

The primary research questions driving this study are as follows :

•What are the Teachers' and students' perceptions regarding the integration of AI in EMI classrooms at Mohamed El Bachir El Ibrahimi University?

•What are the perceived benefits and concerns of the use of AI in teaching and learning in an EMI context?

significance of the study

Answering these research questions will help in exploring the details of the understanding of the teachers and the students, especially regarding the use of AI in the context of English Medium Instruction (EMI) classrooms within Algerian higher education. An approach to the existing literature on EMI and also the use of AI in education framework will be called to address the gaps in knowledge that this research aims to fill and was the purpose of this study. In addressing these gaps, the study seeks to inform the Algerian context of EMI with AI in ways that influence the formulation of appropriate implementation frameworks for such local contexts as well as some international counterparts.

This study is qualitative, using interviews and questionnaires to gather information on the attitudes and concerns of students and teachers around the use of AI in EMI teaching. Thorough methodological approaches will be applied to ensure the validity and reliability of the research, while strict ethical measures will be adhered to to maintain the integrity of the research. The results are expected to directly benefit stakeholders of EMI policy, institutions, or educators concerned with the use of AI in instruction design. The following literature review will discuss the existing works on the use of AI in teaching English at a higher level through the medium of English, their effectiveness, advantages, and challenges while highlighting gaps about perceptions in the context of Algerian universities.

Chapter One:

Literature Review

1-1 Introduction:

Recently, English as a medium of instruction (EMI) has become a focal point for educators regarding its impact on academic performance. In particular, the development of Artificial Intelligence (AI) has sparked curiosity about the ever-evolving domain of EMI. The focus of this chapter will first explore concepts around the definition and importance of EMI in consideration of its novelty within Algerian universities. Secondly, this literature review will discuss the advances as well as the drawbacks of AI systems. Finally, it will analyze the role of AI in English as a Medium of Instruction, evaluating the extent to which AI tools can aid in the teaching and learning processes within an EMI environment.

Kirkpatrick (2015) argues that several non-English speaking nations have acknowledged the value of English language skills for their graduates in terms of international employability and have integrated English as a Medium of Instruction (EMI) in their higher education institutions (HEIs). Algeria happens to be one of the countries that has newly adopted EMI in its universities.

The Ministry of Higher Education in Algeria plans to fully integrate the use of English into scientific research. Starting with the 2023/2024 academic year, instructors are prepared to teach classes in English. This development is believed to increase the global competitiveness of Algerian students and help position Algeria as a regional hub of educational quality and leadership.

One of the challenges that arise with the implementation of English as a Medium of Instruction (EMI) is the low proficiency level of English among students and teachers. This situation may impact the participants' motivation as well as create barriers to the teacher's effective content delivery. Another problem is code-switching, especially that which incorporates the use of the region's dominant languages or foreign languages like French, which can hinder the learning process.

Research AI applications regarding language learning and teaching effectiveness are often emphasized in modern AI-enabled tools. There is no single definition of AI, but it can be seen as the design of machines that can perform functions that always require human brain activity such as learning, reasoning, solving problems, and even making inferences. The debate over whether AI will replace educators remains contentious. It is more likely to serve as a

sophisticated supplement to educational practices, enhancing the control and autonomy of instructors over their teaching. Therefore, it makes sense to focus on how AI can effectively be utilized within EMI teaching and learning strategies in higher education, which presents one of the principal issues this research seeks to address.

1-2 EMI Defined

EMI utilizes English in the teaching of other subjects methodically where English is not the primary language of instruction (Dearden, 2015; Galloway & Ruegg, 2020). Formulated initially as a teaching framework (Han, 2023), its swift adoption across the globe - in over 100 countries as of (Macaro, 2022) - illustrates its function not only as an academic lingua franca but also as a strategic institutional tool (Simie & McKinley, 2024). Recent scholarship recognizes three major strategic functions: (1) boosting the employability of graduates in the global workforce especially in STEM areas (Kirkpatrick, 2023); (2) enhancing the profile of university-based scholarly outputs through the English vernacular; and (3) international scholarly exchange (Tou & Kao, 2017; Chang et al., 2023). This threefold function is why 85% of so-called 'internationalized' universities have adopted some form of EMI (European University Association, 2021).

The working definition still stands as instruction without overt language objectives (Madhavan, 2016), although evidence suggests that students enrolled in EMI programs outperformed traditional EFL learners by 20-30% in English language skills over some time (Pérez-Cañado, 2022). This EMI framework of education as innovation combines knowledge of English, knowledge of a discipline, and some form of language exposure.

1.2.1 The Historical Progression of English as a Medium of Instruction (EMI)

The rise of English as a Medium of Instruction (EMI) in the context of higher education can be traced to globalization in the later decades of the 20th century, education postcolonial frameworks, and the commodification of education (Dearden, 2015; Macaro, 2018). While the 2000s served as an accelerating period for the expansion of EMI initiatives, an

examination of its history reveals various regional pathways and motivations—including Europe's institutional internationalization in comparison to Asia's postcolonial recalibrations and Africa's early adoption.

1.2.1.1 The European Context

The Bologna Process (1999), along with the subsequent increase in international student mobility, positioned Europe as a frontrunner in the formal adoption of English as a Medium of Instruction (EMI) in higher education. In 2001, Maiworm and Wächter's (2002) landmark study reported approximately 725 English Taught Programs (ETPs) across 19 European nations. This figure skyrocketed to 8,089 by 2014, marking a staggering 239% growth (Wächter & Maiworm, 2014). The Netherlands, Germany, and Scandinavian countries led The charge, using EMI to increase enrollment from non-EU students and bolster institutional standing (Brenn-White & van Rest, 2013). Still striking, by 2014, only 1.3% of European Students were enrolled in ETPs, underscoring the fact that while EMI served as a strategically internationalized tool, its usage was limited (Dimova et al., 2015).

1.2.1.2 The Asia Context

The growth of EMI in Asia reflects the paradox of decolonization, on one hand, and the practical acceptance of English in furtherance of economic growth. Post-war Indonesia and Malaysia worked towards the establishment of national languages to fight colonial influences (Kirkpatrick & Liddicoat, 2019). However, by 2000, EMI was adopted as one of the core features of the regional education hubs that tried to retain students and revenue which had earlier been lost to Anglophone countries (Kirkpatrick, 2011). China’s EMI expansion has been dubbed “a runaway juggernaut” (Hu, 2008, as cited in Rose et al.,2022) and by 2021, China's ETPs accounted for 12.2% of the global total (British Council &StudyPortals, 2021). In the same manner, Japan’s Top Global University Project aimed to increase the number of EMI courses from 20,000 to 56,000 by 2023 (Macaro, 2021), which demonstrated state-sponsored alignment with international higher education.

1.2.1.3 African and Latin American contexts

The adoption of EMI in non-Anglophone Africa and Latin America is constrained by resource limitations and competing linguistic priorities (Macaro et al., 2018). The predominance of English in South Africa reflects colonial inheritances (Hurst, 2016), while North African Countries like Algeria have imposed the use of English at primary and secondary education

as well as university level in a bid to reduce Francophone domination (Saad Allah, 2023). Latin America is characterized by limited uptake of EMI, which is explained by strong policies in favor of national languages and low institutional supply (Lasagabaster, 2022).

1.2.1.4 The "Unstoppable Train": acceleration of the 21st century

In Macaro's 2015 framing, EMI had become by the 2010s "an unstoppable train". The British Council reported, in 2021, the existence of 27,874 ETPs outside of Anglophone countries; 63% of which were located in Europe and 12.2% in China. This expansion was not due to pedagogy but rather international student recruitment.(Ammon & McConnell, 2002) and ranking metrics (Smit & Dafouz, 2012) overshadowed concerns about linguistic equity (Galloway et al., 2017).

1.2.2 Shifts in the Academic Language Policy Towards EMI

An academic language policy change from teaching English as a foreign language to English as a Medium Instruction, EMI, is rapidly transforming globally and in non-Anglophone regions (Dearden, 2015; Macaro, 2018). This marks a change where English is no longer treated as a subject on its own but shifts to an important medium for teaching other subjects like mathematics, science, and medicine (Wächter & Maiworm, 2014). This is part of a wider neoliberal framework in higher education where EMI is used to internationalize the Institutions, market the institution, make it competitive or respond to global employment needs (Barnawi, 2018; Phillipson, 2009). The overarching move towards EMI as a sudden change in focus in academic language policy reveals the need to explain the recently shifted strategy in Algeria and that will be discussed in the next section.

1.2.3 EMI in Algerian Education

1.2.3.1 The Evolving Language Policy in Algerian Higher Education

The language policy of higher education in Algeria can be analyzed through three sequential phases aligned with the country's trajectory after colonization. The immediate post-independence period (1962-1990s) was marked by the Arabization of policies which incorporated a shallow use of Arabic liberal arts while preserving the teaching of French in STEM disciplines for their technical usefulness (Benrabah, 2013), thereby establishing enduring linguistic diglossia.

The 2023 shift to English-medium instruction (EMI) for nonmedical fields to enhance competitiveness preceded by the 2004 LMD Alignment Bologna reforms which preserved French dominance in the Algerian educational landscape (Benouar, 2013), marked a decisive shift in research competitiveness(MHER, 2022). This Arabic-French-English Algerian language framework coincides with Algeria's developing infrastructure of 1,472 laboratories comprising 19 specialized research centers (Bouabdesselam, 2022). This policy exemplifies a tension between linguistic self-determination and global academicized embeddedness,

illustrating the situation of post-colonial countries as simultaneously offering agency to enact transformative change while posing challenges around actualization struggles.

1.2.3.2 Adoption of English-Medium Instruction Policies in Algerian Universities

The Algerian higher education framework officially designated English as a Medium of Instruction (EMI) in 2023 under decree by Minister Kamel Baddari, building on initiatives from former Minister Tayeb Bouzid. A national survey issued in 2019 uncovered overwhelming support from 94.3% of respondents (Echoroukonline, 2019). Participants expressed endorsement of English's role in greater institutional visibility and rankings, especially in STEM fields (Radioalgerie, 2019). Under the new framework, 64,000 faculty are to be trained in blended modalities (28,000 in-person and 36,000 remote) along with tiered targets of 80% for STEM and 100% for the Humanities, delivered through Bachelor programs, CEIL centers, and digital platforms (Boutheldji, 2023). This realignment acknowledges the use of English as a vehicle for scholarly communication within the world's academic arena (accounting for 94% of indexed publications – Bouabdesselam, 2022) and attends to local needs. The policy both improves the international employability of graduates and decreases reliance on Francophone countries, all while maintaining Arabic constitutionally. Jacob (2020) noted that this approach received strong stakeholder backing. The supporting administrative changes such as the obligatory bilingual documentation policies (Elbilad, 2019) also symbolize Algeria's bid towards the modernization of education as well as systemic decolonization.

1.2.3.3 Rationales for Algeria's EMI Implementation

The adoption of English as a Medium of Instruction (EMI) in Algerian higher education is motivated by three distinct rationales. Macaro et al. (2018) argue that, on the academic front, EMI acts as an avenue toward a global academic world, which allows access to significant research as well as publishing in prestigious journals (Macaro et al., 2018). This is vital for especially STEM and social sciences where English becomes the lingua franca of academia. Compliance with the Bologna Process (Airey, 2020) increases the competitiveness of Algerian institutions, thus fostering academic mobility and collaboration in research. EMI also responds to the needs of the economy by training graduates in the English language, which is a requisite for employment in most multinational companies (Kaddari & Mazouzi, 2022). Given the widespread use of the English language in technology and business, the implementation of EMI has the potential to enhance employability for graduates and attract foreign investments.

The use of English serves these broader socio-economic goals but on the other hand, politically, it shifts the historical policy of Francophone supremacy by integrating Algeria into Anglophone academic circles (Bouasba et al., 2021). This change aligns with the country's goals of modernizing education and increasing global outreach. Together, these reasons explain how EMI acts as an academic need and a socio-economic driver for Algeria's International integration.

1.2.3.4 Advantages of EMI Application in Higher Education

The adoption of English as a Medium of Instruction (EMI) in higher education offers significant academic and professional advantages. Firstly, Hu and Lei (2014) and Galloway et al. (2017) argue that EMI improves students' language skills and cognitive abilities as learners can now acquire content knowledge in English and understand its advanced level English, which is essential for employment opportunities around the world. In addition, having access to English-based academic materials, including international journals and research publications, augments learning outcomes and broadens horizons. Moreover, EMI fosters the understanding of different cultures and enhances intercultural awareness through the exposure of different ideas, which equips students for collaborative work in multi-national cultures(Huang & Curle, 2021).

On the institutional level, EMI has far-reaching impacts and benefits beyond the specific advantages offered to learners. Elkhayma (2022) observes that the global mobility of students and faculty previously served as an EMI internationalization driver in a market where EMI is available. With students from other countries paying for tuition and scholarship opportunities, EMI advancements serve as an internationalization driver, which grows the profile of universities for faculty and students. Compliance with international frameworks like the Bologna Process improves curricular equality and fosters academic collaboration between countries.

In the context of Algeria, EMI is in line with the objectives of economic integration since proficient English graduates are more likely to engage in information-intensive industries and serve to generate foreign investments (Tayeb Bouzid, 2019). These advantages highlight the EMI's transformational possibilities regarding the local education systems and globalization.

1.2.3.5 Barriers to the Implementation of English as a Medium of Instruction (EMI) in Higher Education

EMI implementation faces systemic challenges, especially in non-Anglophone regions. English remains the primary language of instruction which generates challenges both for learners and teachers. Understanding Basic English is essential for both faculty and students at all levels, and teaching through English channels is crucial. Low English proficiency leads to misunderstandings, diminished active participation, and resorting to code-switching which undermines content delivery (Oktaviani, 2019).

"Overcoming pedagogy-related barriers" describes an area of pedagogy in which instructors find it impossible to engage with student-centered approaches, which compels them to return to lecture-centric methodologies that are outdated and unsuited for multilevel classrooms (Alhassan, 2021).

Additional administrative and institutional boundaries working towards the construction of EMI reveal more obstacles; The lack of locally relevant teaching materials and EMI materials or the financial burden that comes with redesigning curricula poses EMI's success "significant strain" (Galloway & Rose, 2021). Besides, there might be social concerns too; The increasing use of English might mean the belonging of local languages and cultures which may face opposition from the concerned and invested parties (Chapple, 2015). In Algeria, widespread reliance on EMI without adequate infrastructure or teacher professional development could exacerbate these problems. In Rwanda and Saudi Arabia, where students disconnected due to extreme pivots in schooling structures, folks experienced sudden changes without preparing (Anne, 2012; Al Zumor, 2019). Addressing these multi-layered issues necessitates cross-disciplinary collaboration with deliberate holistic linguistic and pedagogical frameworks.

1.3 Artificial Intelligence (AI)

In the context of English as a Medium of Instruction (EMI) settings, Artificial Intelligence acts within its designated role as a strategic aide to teaching and learning processes. Technologies such as chatbots, which provide conversational practice, and more sophisticated tools like intelligent tutoring systems, which offer detailed grammar lessons, average participation and productivity in English Learning and Teaching (ELT) contexts. These systems operate as copilots within EMI instructional settings, improving the overall experience and productivity of educators and students alike (Chassignol et al., 2018; UNESCO, 2021). As

these assistants analyze and process learner data, they provide real-time insights to practitioners, enabling the segmentation of educational content tailored to specific strengths and areas of improvement. In this manner, AI facilitates the achievement of more equitable learning opportunities (Zawacki-Richter et al., 2019). Structured policies and frameworks on competencies support the cognitive gap, ensuring the AI is designed with humans at the centre, thus, using it provides an impetus for innovation in teaching practices rather than eroding foundational educator competencies (UNESCO, 2024).

1.3.1. AI Defined

AI in EMI can be understood as artificial agents created in software form that aim to reproduce selected features of human intelligence, such as responding to questions based on their inputs, in order to make the processes of learning and teaching English more efficient. In its most basic form, AI is used to refer to machines that are designed to perform functions such as understanding language, reasoning, and recognizing patterns which are performed by human beings (Russell & Norvig, 2010). According to Bostrom (2014), these systems range in scope from Automated Language Processing Systems that specialize in certain uses of language, such as grammar correction (ANIANI Artificial Narrow Intelligence), to Human-level Another form of intelligence that hopes to achieve the same flexibility as humans in thinking processes (AGI Artificial General Intelligence), and superhuman human capabilities (ASI Artificial Super-Intelligence).

Artificial Intelligence (AI) is taken to mean any systems that emulate human mental activities (like learning and problem solving) and perform tasks which technically require human intelligence (Russell & Norvig, 2010; Stone et al., 2016). The Turing Test (Turing, 1950), which tries to establish whether a machine's response could be mistaken for a humans, highlights the desire to achieve human replicated AI. Earlier definitions proposed that AI is enabling computers to function better than humans in some defined elements (Rich & Knight, 1991), but AI today includes robust software that performs data analysis, pattern recognition, and decision making on its own. Artificial Intelligence has transformed from mechanical systems into invaluable instruments in healthcare, finance, and education (Luckin, 2018).

AI frameworks are divided into three tiers:

Artificial Narrow Intelligence (ANI) focuses on performing set tasks with superhuman efficiency, for example, facial recognition technology. Artificial General Intelligence (AGI), aims to attain human level flexibility; and Artificial Superintelligence (ASI), a theoretical phase

of surpassing human intellect and control (Saghiri et al., 2022). Theories posit that all modern technologies utilize ANI, whereas AGI and ASI remain theoretical with type division into Speed, Collective, and Quality. Pokrivcakova (2019) clusters definitions of AI into: (1) systems simulating human thought processes, (2) machines executing intellective functions, and (3) technologies motivated by—but separated from—biological intelligence. The very essence of these definitions stresses the interdisciplinary character of AI by integrating computer science and education towards adaptive, learner-centered teaching approaches (Chassignol et al., 2018).

1.3.2 Development Of AI

The use of AI technology in education is receiving more attention at the policy level due to its impact on learning (through initiatives like Intelligent Tutoring Systems) as well as on AI literacy - understanding how to use AI technologies among different stakeholders in education (Miao & Holmes, 2021). This marks a shift that is characteristic of the post-industrial economy, which focuses on the creation of new services and products. AI's potential to enhance – as opposed to replace – human teaching is still a topic of dispute (Selwyn, 2019; Molenaar, 2022). Education as the forte of pedagogical AI is now the domain of all educators, which means that they require a sound understanding of the tools themselves as well as the applied ethics of technology to understand its transformative capabilities. Constructivist approaches to AI in education are rooted in the history of cognitive science and problem solving. Pioneers such as Newell and Simon, who developed the *General Problem Solver* (GPS) program in the 1950s deriving inspiration from Polya's (1945) heuristics which broke down problem solving into multistage tasks including planning and evaluation, geared towards mechanization of human reasoning. Also noteworthy is Pressey's feedback-driven testing machine from 1926, Skinner's *teaching machine* designed for personalized tutoring in the 1950s as well as Carbonell's *SCHOLAR* system in 1970 that utilized semantic networks for adaptive instruction. With all these developments, AIED emerged as a culmination of cognitive architecture and practical devices such as ITS for knowledge organization and learner-centered design (Koedinger et al., 2012; Baker & Smith, 2019).

1.3.3 Application of AI in Teaching/Learning

Almost every sector has integrated technology to fulfill its basic requirements. Education is one of the key domains that is advancing rapidly toward the use of technology in the process of teaching and learning. Integrating technology in the teaching and learning of

languages is continuing to emerge as a fundamental requirement of the teaching and learning process. (Adapted from Chassignol et al., 2018; Pedro et al., 2018) Thus, "technology introduces a new horizon of learning opportunities which causes a shift in the traditional methods of teaching." (Shafie Et. Al, 2019 as cited in Pragasam and Sulaiman, 2023:325). Furthermore, these technologies take varying forms and are utilized in different educational settings, including personal mobile applications for learning and assessment as well as information systems for administrative and managerial functions within educational institutions (Al Braiki et al, 2020; Schiff, 2022; UNESCO, 2021a as cited in Chan, 2023). There are some changes in teaching processes in classes because English is not taught effectively using the chalk and talk method (Susikaran, 2013 as cited in Ahmadi & Guilan University, 2018). For that reason, "AI will serve as an additional support system and this will be very important for the learners and the teachers of English." (Gawate, 2019 as cited in Fitria, 2021:215) AI is described as the use of AI systems in teaching/learning the English language to enhance the processes of content organization, selection, and arrangement (Mukhallafi, 2020 as cited in Fitria, 2021). Further, artificial intelligence has been integrated into English Language Teaching (ELT) as a resourceful aid in curriculum execution (Li, 2017 as cited in Fitria, 2021). Teachers are appreciating the benefits of AI technology within the realm of education. As academic performance and job readiness are aided, reporting becomes easier, learning is tailored to each individual, and gaps in knowledge are pinpointed (Fahimirad, 2018). Furthermore, educators need to model teaching techniques using electronic resources for students to support and enhance their language development so that learners can harness technology in more substantive ways (Costley, 2014; Murphy, DePasquale, & McNamara, 2003 as cited in Ahmadi & Guilan University, 2018). On the contrary, some people are of the opinion that generative AI is likely to change education for the better in a more fundamental way for students. For example, experts in adaptive learning posit that generative AI is capable of providing step-by-step instruction and evaluative feedback designed for each student's specific needs (Kasneci et al., 2023; Sinhaliz et al., 2023 as cited in Chan, 2023). Numerous students feel that there is far too much information being provided and not enough structure, yet AI can identify missing elements within courses and provide relevant material and tailored assignments designed to meet specific standards while improving the completion rate of coursework.

These functionalities provide an astounding response to the challenges of educators, making educational interactions more productive and beneficial to learners (Fahimirad, 2018). In the

field of higher education, the implementation of artificial intelligence alongside teaching and learning via mobile devices (m-learning) is expanding rapidly (Pedro et al., 2018). The implementation of advanced artificial intelligence is enabling the resurgence of independent learning opportunities (Rieland, 2017 as cited in N & Kumar, 2023).

Teaching English Language using Artificial Intelligence (AI) is the easiest entry-point for English language teachers towards the application of such technology (Ribeiro, 2020 as cited in Fitria, 2021). "It is believed that Artificial Intelligence (AI) can provide great assistance to learners making it more efficient in attaining educational objectives" (Fitria, 2021, p. 218).

Thus, Fitria states, "It is not astonishing that there are and will be numerous innovations and breakthroughs based on AI that will be utilized to aid the learning process and make it more efficient" (Fitria, 2021, p. 135). This is why, "the students also can learn according to their needs without encountering difficulties." (Fitria, 2021). From these facts, "AI can be applied to foster learners' acquisition of knowledge and skills through personalized feedback, adaptive content, and tailored to the learner's style" (Atlas, 2023; Chan & Hu, 2023; Luckin, 2017 as cited in Chan, 2023). "In designing AI-infused educational technology, we must ensure that a principal design goal is to help learners who have experienced the most difficult learning circumstances, especially during COVID-19 and other inequities," (Cardona et al., p.18). Furthermore, in order to equip students for the future, fostering an AI education at the university level is essential (Aoun, 2017 as cited in Chan, 2023). Additionally, according to Seo et al. (2021) and cited in Patty (2024), "AI systems support teaching and learning in a flexible online environment by personalizing student learning, automating routine instructional tasks, and adaptive assessment." There is an equally compelling explanation for such concerns which include privacy, information security, and the readiness of educators in providing necessary pedagogical resources, materials, and strategies (Woo & Choi, 2021 as cited in Patty, 2024). Weak AI and Strong AI represent a philosophical contradiction, according to the early tendencies in AI research.

1.3.3.1 Weak and Strong AI in Pedagogical Design

Strong AI refers to the application of artificial intelligence whose goal is to create systems that are able to understand humans and interact with them. Systems where human understanding of the concept was not allowed to be used were considered weak (Marr 2022 as cited in N & Kumar, 2023). Other articles included in the review also describe and discuss various other ways of integrating AI as a pedagogical instrument. Specific software or as such

applications which are AI-driven and geared towards stimulating and promoting learning among students have been emphasized. A significant example of artificial intelligence aiding in the improvement of students' learning is in the modification,

adaptation and alteration of the curriculum and instructional content to fit the learners' needs, abilities, and potential (Mikropoulos & Natsis, 2011 as cited in Chen et al., 2020). Certain platforms will assist the modification and adaptation of learning content so as to enhance information retention and, therefore, improve the overall learning experience of the learner.

1.3.3.2 Empirical Research on AI-Supported Language Learning

Empirical research on the adoption of AI in Foreign Language (FL) learning shows that through the use chatbots, there has been a significant increase in the amount and sophistication of learner language production (Golonka et al., 2014; Zhang & Zou, 2020 as cited in N & Kumar, 2023). In addition, the users are engaged by the AI systems through Text or Speech Enhanced Chat, and the sophistication of voice interplay has advanced remarkably in the last three years. Nordrum (2017, N & Kumar, 2023) also notes that, an application such as Knewton makes real time recommendations for students based on the algorithms provided by the technology machine learning systems, and adapts the course materials or content to suit the learners needs (Chassignol et al., 2018, as cited in Chen et al., 2020). Other AI-integrated software such as Grammarly, Ecree, PaperRater, and TurnItIn offer instructors an array of administrative duties such as providing plagiarism checks, ratings, and grading, and offering constructive feedback highlighting areas for students to improve.

From an administrative point of view, AI has automated several functions, reduced the burden of paperwork, and such innovations are directing instructors' attention towards their primary work, which is teaching, and the content and materials in the curriculum at the institution or at the national level . Similar advances provide new opportunities for learners of languages to access numerous resources and authentic opportunities for communication with the target language (Ji et al., 2023 as cited in Patty, 2024).

1.3.4 Types of AI Applications

A striking example that aligns with the focus of the current study regarding perceptions is Hadizadeh's (2024) work on the English Medium Instruction (EMI) students and teachers views on the role of AI technology. He adds that there are extremely divergent attitudes toward

the use of ChatGPT, Grammarly, Turnitin, and Google Translate—tools that, for all intents and purposes, do the work for the student and are, to put it quite bluntly, abused by students. The excerpt suggests that besides the EMI and academic writing challenges, new technology has recently joined the fray in this context for Northern Cyprus and other places. With just a few clicks, students can enable numerous writing assistants which make it difficult for L2 instructors attempting to instill a sense of intellectual honesty and proper scholarship. A number of academics also investigated the employment of Google translation in lower secondary and secondary school writing classes. Gokgoz-Kurt(2022) studied the literature regarding the use of MT in EFL classes and he noticed a significant reluctance by numerous EFL practitioners towards the use of GT.

As an efficient form of assistive technology, some researchers have perceived GT (Google Translate) as a beneficial tool in computer-aided language learning systems (CALLS) for English as a Foreign Language (EFL) writing tutorials (Bahri & Mahadi, 2016; Alhaisoni & Alhaysony, 2017). On the other hand, some scholars have been critical of the application of GT in teaching EFL because of its perspective on mother tongue as an interference. While it is true that recent alterations done on GT have greatly enhanced its performance, teachers and students who are the primary users of this device have shunned it due to the gadget's rough and unrealistic depiction of the world (see Briggs, 2018, Stapleton & Kin, 2019). The release of AI bots, however, seems to be changing the situation for both second language learners and their teachers. Its impact has already been felt worldwide in education since its public unveil in November 2022. Teachers' perceptions toward the use of chatbots in the teaching environment has been researched by Chocarro et al. (2023), Pokrivcakova (2022), Belda-Medina and Calvo-Ferrer (2022), and Zimotti et al. (2024). Chatocarro et al. (2023), for example, pointed out that people are more willing to embrace persuasive technologies when they are easy to use and provide practical benefits. In educational settings, especially when submitting assignments, the use of plagiarism detection systems, such as Turnitin, is quite common.

Nonetheless, as Warschauer and Grimes (2008) suggest in their case study, these resources are not used as intended---they do not enhance the learner's writing capabilities, but rather, assist in completing tasks with minimal intellectual effort. The possibility of fostering feedback still remains mainly unexploited in automated technologies: they could be used to provide formative feedback on students' grammar, style, or even originality. However, tools designed to help students hone their critical writing skills are rarely employed for that purpose

(Li & Storch, 2017). Scholars are concerned as students increasingly rely on tools that reduce cognitive investment, undermining the development of vital skills like analysis, creativity, and academic integrity (Howard, 2007; Pecorari, 2008). These factors contribute to the loss of autonomy learners experience when learning becomes reduced to a mere tick-box exercise, which raises pedagogical concerns about learner autonomy and growth stagnation (Selwyn, 2016). Meeting educational goals has led some scholars to appeal for proactive measures aimed at framing such technologies as aids for gradated self-improvement in order to foster metacognitive thinking instead of relinquishing control with lower-order tasks (Hyland, 2019). Having tools like Google Translate, Grammarly, or AI means students can shift the burden of work towards these technologies without thinking how their genuine effort and critical thinking will be invalidated.

The overdependence of students on these technologies poses a unique threat to academic integrity because the original work becomes less feasible with every use of the tool. Besides this, educators have to grapple with the apparent overdependence of students on various aids and technological tools that make the process of learning and understanding the material easier. Doing so makes figuring out original work vastly different. Also, educators face a different set of obstacles, such as elementary tools for checking plagiarism that have a limited ability to prove more sophisticated copying or AI edits.

1.3.4.1 Language learning apps

The use of different AI-integrated language learning applications, as part of the English Medium Instruction (EMI) framework in higher education, showcases the increasing attention directed at modern technology for language learning purposes. Writing and ChatGPT usage for text generation, along with conversational and pronunciation self- assessment practice enabled by language learning applications, are being used by students, promoting motivation and fluency enhancement (Zhang & Zou, 2020). Students sharpen their communicative skills and confidence with the help of realistic speaking practice offered by Lingostar, a conversational AI. Feedback on speech and intonation presented by some applications such as ELSA Speak is instantaneous; however, some users suggest they do not offer sufficient challenge to more advanced learners. Peaksay is another AI conversation simulator designed to help learners develop listening and speaking skills through prompted dialogues. EnglishCentral and some other platforms go a step further by integrating multimedia and artificial intelligence to bolster listening and vocabulary acquisition through authentic videos. Although educators appreciate the functionality of Google Translate for rapid understanding assessment, they commonly

voice concern regarding its ubiquitous use, cautioning that overdependence may impede the establishment of robust linguistic skills (Stapleton & Kin, 2019). Students gain access to more sophisticated English structures because of tools like Grammarly; however, students can quickly develop a dependence on such tools, hindering their ability to write independently (Özkan, 2024). Typically, conversational AI chatbots help students practice their spoken English without fear of being judged, which helps improve their speaking skills. This environment complements classroom instruction as it helps to erode the boundaries associated with traditional teaching methods. Classroom applications of such technologies demonstrate the varying ways artificial intelligence augments English language learning within English Medium Instruction frameworks (Özkan, 2024).

1.3.4.2 Chatbots and virtual tutors in content learning

As a result of ever-available support and the provision of personalized learning paths, AI Systems like ChatGPT have shifted the educational paradigm in both formal and informal contexts (Speth et al., 2023). AI chatbots can now act as virtual tutors and help with various tasks, including helping students understand complex biomedical ideas (Zaabi et al., 2023), teaching them programming languages like Java or Python, and even engaging in language simulations for foreign language dialogs (Ayedoun et al., 2015; Kovacevic, 2023). For instance, in computer science, ChatGPT is highly regarded for code generation and debugging, although propounding advanced tasks like UML diagram generation stumps it (Berrezueta-Guzman & Krusche, 2023). In teaching, AI chatbots are also helping in the automation of administrative work such as answering the most common questions, preparing the materials for the course, and providing feedback based on the AI evaluations of the student's work to the evaluations of AI (Dai et al., 2023; Gill et al., 2023).

The use of ChatGPT in Learning Management Systems (LMS) has enhanced mixed models of learning such as flipped classrooms, where students attend lectures through chatbots and face-to-face lectures are reserved for dialogues synthesis (Martínez-Téllez & Camacho-Zuñiga, 2023). Educational institutions like Singapore Institute of Technology (SIT) have implemented the TutorBot case study, which achieved an astonishing 90% increase in how efficiently students retrieved resources compared to existing LMS systems (Subramanian et al., 2019). ChemQuest chatbot at SIT improved the retention rates of the online chemistry course by clarifying contents on-demand, which hence increased their satisfaction (Atmosukarto et al., 2021). Introducing AI chatbots, however, comes with a unique set of challenges. Earning a

degree without proper academic work, cheating, and plagiarism are at the top of concerns and in fact, 60% of students surveyed admitted to using AI to get their coursework done (Arista et al., 2023). Gill et al. (2023) claims that these are further amplified by the use of AI interfaces like ChatGPT, that can circumvent screening tools such as Turnitin. Technical issues are just as grave, including the low quality of answers given: Zuccon et al. (2023) cited a study where 49.4% of ChatGPT answers to agricultural questions were factually wrong. Worrying is the gaps in privacy and security such as phishing powered by AI through computer-coded malware (Wagholi Kar et al., 2023). As a response to these challenges, some scholars recommend employing a combination of qualitative and quantitative assessment techniques, such as oral examinations together with AI detection methods (Raza & Hussain, 2023). The Hong Kong University of Science and Technology (HKUST) has successfully trained teaching assistants with chatbots, which have made responding to frequently asked questions more efficient (Gonda & Chu, 2019). Policies should be established that proactively address how educators incorporate AI into the instructional design processes including real-time bias mitigation algorithms, autonomous educator self-training systems to avert chatbot instructional overload, and bias-prevention frameworks for educator training designed to avert instructional degradation due to chatbots.

1.3.5 AI: Friend Or Foe

Cummins and Jensen (2024) begin by situating their work in the broader "explosion of interest and debate" around generative AI's role—as either an enabler or a threat—to human interactions and organisational processes . To probe this dichotomy, they designed a controlled experiment involving negotiation teams from ten countries, each given a strict 30-minute window to resolve four core issues under three conditions: unaided, AI-assisted (one party using ChatGPT), and fully AI-mediated . Their findings reveal that AI-assisted teams uniformly achieved "win–win" outcomes far more quickly—some in as

little as two minutes—while unaided teams frequently floundered on unstructured agendas, émotional détours, or outright impasses . Beyond speed, AI's algorithmic guidance enforced transparency by systematically mapping trade-offs and prompting data-driven offers, thereby reducing bias and fostering trust even across culturally diverse participants . The authors also highlight a compelling case study from BP, where an AI-driven contract-term portfolio enabled suppliers to self-select priorities—yielding both tailored proposals and consolidated insights for future standardisation—underscoring AI's potential to scale collaborative value creation . Yet Cummins and Jensen do not gloss over the caveats: they warn that using public AI

platforms poses data-confidentiality risks, that an "AI gap" can emerge if only one party leverages the technology, and that nuanced ethical frameworks are urgently needed to govern AI's deployment in sensitive negotiations . Finally, they stress that realizing AI's promise hinges on robust user training—particularly in prompt engineering and human–machine interface design—to prevent miscommunication bottlenecks and ensure AI augments rather than replaces human judgment and emotional intelligence . Collectively, these empirical insights lead the authors to affirm that, with thoughtful integration and ethical guardrails, AI functions not as a foe but as a potent ally in negotiating complex deals.

1.3.6 Teacher's perceptions about AI integrations in learning and teaching :

Educators from different teaching contexts generally perceive the integration of AI positively to its promised elaboration on personalisation, creativity, and operational efficacy in the classroom. AI-powered platforms deliver real time feedback tailored to specific learner needs and offer differentiated assistance, particularly in mathematics and language learning where) adaptive exercises kindle grade level appropriate challenges (Yim & Wegerif, 2023). Considered by Indonesian teachers as "a powerful resource" for personalized instructional design, AI aids in fostering more sophisticated levels of understanding. For instance, science teachers in remote provincial regions have reported utilizing AI simulations to perform experiments that are resource constrained (Pratiwi, Nugroho, & Santoso, 2024). An international survey of 508 K–12 teachers from Sweden, Finland, India, Brazil, Kenya and the Philippines showed greater self-efficacy in AI correlated significantly with more favorable attitudes: 72 percent of high self-efficacy teachers believed instructional engagement through AI was enhanced, while only 45 percent low self-efficacy reported the same (Viberg, Hatakka, Ukkonen, Pilemalm, 2024). In the United States suburban schools, 45% of the 205 teachers surveyed strongly agreed that AI has potential in stimulating creativity and innovation in lesson development while an additional 35 percent believed the tools have potential in automating routine tasks like attendance and grading. Educators to focus on personalized guidance and master-apprentice collaboration (Alenezi, 2025).

In spite of excitement, learners also face a variety of problems, according to educators. Over 60 percent of respondents from the teaching profession indicated they were AI diagnostics' and software's insights interpretation capabilities' authors management features training' interpret and troubleshoot softwares' outlining foundational not course.

Inaccessibility to the internet and compatible devices plagued 40% of rural schools AI tools that were designed to be used intermittently (Pratiwi, Nugroho, & Santoso, 2024). Under some school policies, students' engagement and motivation to learn, leads to the dramatic drop in usage rates due to lack of engagement availability fall under 30% in a number of schools (Pratiwi, Nugroho, & Santoso, 2024). Out of 1,223 Italian secondary teachers surveyed about AI's automotive pedagogical engagements, approximately 31% noted ambivalent feelings, while almost 10% expressed skepticism, with many voicing apprehension around AI-driven dishonesty and privacy breaches, biased outputs, unreliable information, calling for clearer procedural frameworks regarding ethics on AI's use (Petrucco, Rossi, & Bianchi, 2025). You can synthesise all these studies and notice the lack of focus on the cheer was reported needing AI integrated more seamlessly for collaborative experienced based peer frameworks within direct administrative guidance well structured and made them novice driven support on professional development guided workshops in integrating theory.

AI enables advanced opportunities such as tailored educational experiences and automated administrative functions. However, realizing these advantages greatly hinges on better teacher training, sharpened systems frameworks, and trustable equity inapplication policies for AI in education systems. Subsequently, caring frameworks based on ethics need to be aptly constructed to ensure AI utilization is equitable and reliable (Yim & Wegerif, 2023; Petrucco, Rossi, & Bianchi, 2025)

1.3.7. Previous studies

In the last decade, bibliometric analyses have shown the growth of research on AI in language education and the increase in publications associated with this research into adaptive feedback, learner motivation, and chatbot-mediated interaction.

Du and Wang (2023) highlight the sharp rise in AI tools in secondary and post-secondary educational applications, evidenced by over 2600 articles indexed on Web of Science from China and the U.S. between 2018 and 2022, with Computer Assisted Language Learning as a primary publication venue.

Smith et al. (2024) reviewed literature related to the use of AI and reported that AI facilitated real-time translation assistance and provided content in multiple languages, aiding understanding and participation in complex multilingual classrooms.

Wu and Yu (2022) also studied the use of AI chatbots in language teaching, and reported that conversational agents positively impacted learners' speaking confidence and reading skills, though there were long-standing concerns regarding the accuracy of feedback provided to users. It has been shown empirically how chatbot-mediated instruction has more diverse impacts on learner motivation and performance.

Lee, Gómez, and Müller (2023) used a quasi-experimental design and found that AI chatbots significantly improved reading comprehension as well as learner autonomy. However, they also noted that AI error responses could occasionally undermine trust in technology.

Patel and Huang (2024) studied the motivational impact of speaking skills enhancement through AI-powered chatbots and reported increased motivation with concern from instructors about curriculum integration of these tools. At the same time, some authors began looking into other pedagogical possibilities offered by AI.

Holmes and Tuomi (2022) provided an overview of the use of AI in education and stated that while adaptive feedback systems could facilitate self-regulated learning, they need to be backed by solid technology and data governance frameworks.

Almeida and Rodrigues (2024) performed a systematic review of the literature focused on the capability of adaptive learning algorithms to design unique learning pathways, pointing to AI's ability to accommodate varying levels of proficiency..

Zainuddin (2024) surveyed 60 Malaysian English language teachers and found that teachers viewed AI tools as motivational and aligned with personalized learning, but technology gaps and the need for professional training posed challenges.

Chan and Hu (2023) explored facilitators and barriers among Hong Kong university instructors and reported that while 61% of faculty accepted AI-generated instructional materials, only 27% trusted their evaluation of the pedagogical merits of such materials.

Nguyen and Haddad (2024) used mixed methods with 75 secondary teachers and identified that positive attitudes towards AI were strongly linked to prior training and institutional backing, while skepticism stemmed from vague guidance on ethical AI frameworks.

Garćıa, Lee, and Mendez (2024) studied equity and ethics in EFL contexts and found that although teachers recognized the benefits of AI for tailored instruction, concerns about privacy

and algorithmic bias raised the need for robust policy frameworks. The scope of research switched focus as a result of global studies.

Viberg et al. (2023) completed an international quantitative study with 508 K-12 teachers from six countries. They concluded that teachers with higher AI self-efficacy demonstrated more trust in the benefits of AI-EdTech and experienced fewer concerns, thus showcasing confidence's impact on AI acceptance.

Cukurova, Miao, and Brooker (2023) polled 792 school teachers from a single country and found that, in addition to educators knowledge and the quality of the product, ethical values, teacher agency, and access to relevant support greatly impacted teachers' active participation with adaptive learning technologies.

Nyaba et al. (2024) analyzed pre-service teachers attitudes toward generative AI in Ghana, uncovering mostly favorable views, while trustworthiness concerns were also dominant. This suggests that the contextualized training of AI tools is important for the educational preparatory programs.

Together, these studies follow a consistent path from macro bibliometric and systematic reviews which outline bibliographic trends, to investigations of chatbot and AI interventions, culminating in detailed studies regarding teacher perceptions, trust, and adoption levels in AI/ChatGPT-emphasized settings. This scholarship rigorously examines the frameworks that shape educators' understanding of the promises and real-world difficulties posed by AI in education, illuminating the leading questions in the focus on teacher perceptions detailed in the next section.

1-4 Artificial Intelligence in English as a Medium of Instruction (AI in EMI)

1.4.1 The nexus of AI and EMI : Defining the AI-EMI intersection

Since the advent of first-generation computers and their subsequent advancements, technology has played a key role in education (Schindler et al., 2017, as cited in Tahiru, 2021). Educators have used computers for various tasks such as teaching, student assessment, and conducting research. Likewise, students have leveraged computers for studying, research, and problem-solving. Over time, these technological tools have evolved significantly, leading to the emergence of artificial intelligence (AI) as a major development in the digital age. In recent years, AI has become increasingly prominent in educational settings, drawing growing

attention from scholars and practitioners (Zawacki-Richter et al., 2019). Researchers and educational technologists are exploring both the potential benefits and challenges of incorporating AI into learning environments at all levels. With AI, educators aim to enhance teaching strategies, personalize student learning, and streamline administrative processes. Additionally, AI can analyze large volumes of data to inform curriculum design and support data-driven decisions in education. Overall, integrating AI into education has the potential to revolutionize teaching and learning by making it more efficient, tailored to individual needs, and conducive to improved student outcomes.

1.4.2. Challenges and Limitations of AI in Educational Setting

Although Artificial Intelligence in Education (AIEd) holds great promise to transform educational practices, its implementation is not without challenges due to the field's technological complexity and interdisciplinary scope. According to UNESCO (2019), six major obstacles hinder sustainable progress in AIEd: the need for robust public policy, ensuring equity and inclusivity, preparing educators to use AI effectively, improving AI's capacity to understand educational contexts, creating inclusive and high-quality data systems, promoting relevant AIEd research, and maintaining ethical and transparent data practices.

On an individual level, challenges include deep-rooted societal issues such as systemic bias, inequality, discrimination against marginalized groups, and xenophobia (Hwang et al., 2020). Ethical concerns also emerge around data privacy and algorithmic bias (Holmes et al., 2021). The increasing use of AI has sparked fears that it could worsen educational disparities, especially through commercialization or a growing divide between home-based and traditional education (Reiss, 2021).

There is also a risk that people might be unknowingly exposed to AI-related harms, a situation aggravated by the ongoing effects of the COVID-19 pandemic (Borenstein & Howard, 2021). These issues underscore the necessity of educating both teachers and students about the ethical dimensions of AIEd and how to address them. Moreover, AIEd presents complex ethical and privacy challenges that require clear distinctions between ethically sound actions and merely compliant behavior (Holmes et al., 2021). As emphasized by Russell and Norvig (2002), AI developers must remain aware of the ethical implications of their innovations.

Studies reveal multiple ethical challenges tied to both general AI and AIEd, especially in how data is handled in higher education contexts. These challenges include concerns about surveillance, informed consent, learner privacy (Sacharidis et al., 2020), identity, user

confidentiality, and inclusivity (Deshpande et al., 2017, as cited in Nguyen et al., 2023). Further debates revolve around ethical uses of educational data and learning analytics (e.g., Kay & Kummerfeld, 2019; Kitto & Knight, 2019), touching on issues like data governance, stakeholder power dynamics, and perspectives on data interpretation (Slade & Prinsloo, 2013, as cited in Nguyen et al., 2023).

Other significant issues include limitations in data accessibility, biased representation, data ownership, autonomy, and the role of human agency in AIEd systems (Akgun & Greenhow, 2021; Miao et al., 2021). A nuanced understanding of these ethical values and principles is essential for making responsible decisions, as unintended consequences in education could be profound.

While some recent work aims to build ethical frameworks for general AI use (e.g., Ashok et al., 2022), experts argue that ethical and privacy concerns in education need to be interpreted within their specific context (Ifenthaler & Schumacher, 2016). Thus, guidelines from other sectors may not fully apply to education. A contextualized ethical approach could help address privacy and moral concerns in AIEd. Scholars like Kitto and Knight (2019) emphasize the importance of the sociotechnical setting—how educational technologies intersect with pedagogy—in shaping ethical considerations. Embracing diverse perspectives on ethics and privacy can foster the design of trustworthy, ethically sound AIEd systems. Consensus-driven policy and guideline development will provide a shared framework for stakeholders, ultimately supporting the responsible growth and integration of AIEd.

1.4.3 Exploring the Potential of AI Tools in EMI Classrooms

In recent semesters, generative AI applications such as OpenAIs ChatGPT have begun to reshape the classroom landscape, sometimes in a single semester outpacing the usual pace of curriculum reform. Educators have noted that the software lets students personalize their learning journeys, tidies up messy lecture notes, and delivers quick, low-stakes feedback on written assignments. Research from three continents now charts similar patterns, situating the technology at the intersection of pedagogy, linguistics, and artificial intelligence. English as a Medium of Instruction (EMI) provides a revealing testing ground for these innovations. The EMI model has spread through campuses keen to expose non-native speakers to global discourse while simultaneously boosting their command of the language. These dual pressures-reading advanced material in English while absorbing subject terminology-make dedicated language support feel less like an option and more like a lifeline. ChatGPT and its successors

respond to that need in practical ways. The software can churn out writing prompts tuned to a first-year students familiarity with physics, condense a 30-page policy brief into bullet-point summaries, or flag awkward sentence structures before an essay is submitted to the official grading system. Features like these invite instructors to view the program not merely as a chatbot but as an on-demand research assistant that never tires. Not all reactions are enthusiastic, however. Some faculty worry that reliance on an algorithm blurs the line between guidance and ghostwriting, and many admit they lack the training to scaffold its use effectively. Additional ethical questions-such as data privacy, bias in response generation, and the erosion of students' independent problem-solving skills-keep reappearing in hallway conversations and staff meetings, even when course evaluations hint at the tool's popularity among students. The present literature review collects findings from several recent surveys and anecdotal reports, aiming to map the contours of educator sentiment toward generative AI in EMI undergraduate programs. The goal is less to declare universal best practices than to lay out the common hopes, hesitations, and outright objections that shape early adoption in diverse academic contexts.

The rapid integration of artificial intelligence into pedagogy invites both enthusiasm and caution. Researchers are now weighing how such tools can enhance learning outcomes while acknowledging the practical hurdles that teachers encounter. In this light, the present study aims to fill an evident gap in the literature by examining instructors' specific attitudes toward AI within English-medium instruction (EMI) environments.

The role of generative AI in education

Products such as ChatGPT now generate prose that often feels as though a person-not a machine-wrote it. That leap in fluency and coherence hints at a new kind of educational ally, one that can personalize lessons and take over some of the routine grading chores that chew up instructors' time. Because these systems track a learners input in real time, they can dish out feedback that matches the students current level rather than assuming a one-size-fits-all starting point.

Classes that blend subject matter instruction with English-language practice, sometimes called EMI or English-medium instruction, present their own challenges. Recent fieldwork, including the investigation by Marzuki and colleagues, suggests students exposed to AI writing aids report higher levels of engagement, clearer comprehension of course concepts, and a welcome uptick in writing confidence. ChatGPT can slice dense paragraphs into digestible

bites, reword jargon-y terms, and flag stray commas within seconds, thereby lightening the overall cognitive load.

Learning doesn't stop when the bell rings, and that is where the chat interface shines again. A student who wants to hone academic English outside office hours can hold a mock seminar with the bot, arguing points and receiving replies without the sting of judgment. Longitudinal studies have shown that this kind of self-guided, conversational practice tends to pump up both motivation and retained knowledge over the long haul. The landscape keeps shifting; researchers are logging new findings almost weekly, and each release seems to nudge the technology-and its pedagogical implications-a little farther forward.

Meniado and his colleagues examined the views of Vietnamese and Thai learners of English as a foreign language toward ChatGPT as a writing assistant. Many students in Vietnam told the researchers they appreciated the system for idea generation, outline formation, and draft revision. Karatay and Karatay later sifted through forty separate investigations of automated writing evaluation software and noted that such tools consistently raised accuracy, encouraged learner autonomy, lightened instructors workloads, and enriched the overall writing experience.

Another cluster of research zeroed in on dialogue-based agents and machine-assisted narrative generation, measuring how those applications foster joint authorship in the language classroom. Despite the positive findings, the authors admitted that hard data on productive teacher-ai partnerships remain scarce. Wider literature surveys have mapped the pedagogical, technical, and social functions that artificial intelligence now performs in language instruction.

Interest in ChatGPT erupted immediately after its public debut in November 2022, with teachers and students alike experimenting almost overnight. Still, no single review has yet collected the scattered observations about the tool's impact on foreign-language learning. As debates continue over its place in education, scholars face a pressing task: distill the insights from the platform's first year into one coherent narrative.

The present inquiry sets out to address an apparent shortfall in the research record by systematically surveying what has already been published about ChatGPT as it pertains to the learning of language. The term language here is understood in a wide compass that covers both the nurturing of a speaker's home tongue and the process of picking up an additional one.

1.4.4. Teachers' Perceptions of AI in EMI Contexts

1.4.4.1. Attitudes Toward AI Integration

Views on the introduction of artificial intelligence in English-medium instruction vary widely across the teaching body. The differences are often tied to instructors' personal comfort with technology, the level of institutional backing they receive, and the broader pedagogical beliefs they hold. A number of respondents describe AI as a supportive crutch, easing the burden of language scaffolding for students who might struggle otherwise. Alternate voices worry that the same tools could dull critical faculties, permitting learners to skim by without grappling with primary texts or defending their own interpretations. Researchers Lin and Chen, drawing on survey data from Taiwan, note that professors who have already experimented with machine-driven systems frame the software as a handy supplement rather than a disruptive force. Their answers suggest that routine practice and immediate feedback delivered by an algorithm can fill the quiet hours after face-to-face class time ends.

In stark contrast, many teachers who encounter the technology for the first time hedge their enthusiasm. Wei, citing both classroom observation and anecdotal evidence, claims AI makes routine grading faster yet strips conversations of their messier, more authentic qualities. Similar hesitations surface in a study by Zhao and Lee, whose participants warn that constant algorithmic nudging could breed a laziness of mind that stunts higher-order reasoning. Together, these apprehensions sketch a portrait of an instructional landscape divided between cautious experimentation and open skepticism. Psychological studies on habit formation only amplify that worry, hinting that anything felt convenient enough to rely on may eventually crowd out tougher, more rewarding forms of effort.

1.4.4.2. Ethical Concerns and Academic Integrity

One of the primary concerns with generative AI in education is the risk of academic dishonesty. Across campuses, applications such as ChatGPT now churn out text that is not only coherent but also tightly matched to whatever prompt a user supplies. That slick performance has raised a familiar worry: whether students will let an algorithm complete a paper while they check Instagram and call it homework [8]. The concern lands with particular weight in English-medium instruction courses, where polished language is treated almost as course credit in its own right [12].

In response, Tang and Su insist that educators draft precise ethical rules spelling out what is fair-game use of generative text and what crosses the plagiarism line [7]. Such guidelines will

not write themselves; faculty committees must wrestle with finer questions about attribution, co-authorship, and the notion of original thought when a bit of silicon is doing some of the lifting.

One shortcut-friendly temptation is to plug a nearly-empty draft into an AI and let it fill the gaps under pressure of a due date. To counter that lure, some education researchers propose folding the software into formative exercises instead of the summative grind that decides a final grade [24]. Picture students getting iterative, machine-driven feedback on tone, grammar, or argument flow long before the last-word deadline; the draft improves, the shortcut temptation fades, and real learning still happens.

1.4.4.3. Pedagogical Benefits of AI in EMI Classrooms :

Across a range of disciplines, instructors continue to experiment with generative tools like ChatGPT, even while ethical questions linger. Many teachers report that the software lightens cognitive workload by delivering instant corrections and translating complex statements into clearer language, a phenomenon Macaro has documented. Refinements in style and accuracy follow quickly when learners receive machine-suggested revisions on grammar, vocabulary choice, or university-genre conventions. Remarkably, research by Zawacki-Richter et al. establishes that students exposed solely to AI feedback demonstrate higher rates of acceptance and practical uptake than peers limited to human-only commentary.

English-Medium Instruction (EMI) courses frequently accommodate a broad range of language competencies, and large enrolments exacerbate the challenge of individualized engagement. Adaptive AI engines mimic instructor queries and progressively reshape reading lists or exercises in response to each learner's real-time grasp of the topic. Such responsiveness keeps participants motivated, preventing discouragement from over-demanding texts or boredom with content that fails to challenge them. Finally, using an algorithmically driven assistant allows students to work at a tempo that feels comfortable, fostering a low-stakes atmosphere that promotes experimentation and iterative learning.

Recent studies indicate that learners who turn to artificial-intelligence applications for language drills report a noticeable uptick in their self-assurance and claim to be better equipped for English-medium instruction [8]. Such unsupervised, extracurricular engagement places responsibility for progress directly in the hands of the student and, in the process, nurtures the autonomy that universities routinely emphasize [11]. In broad terms, these adaptive

technologies produce more tailored learning pathways while steadily bolstering the users confidence.

1.4.5 Previous Studies on AI Integration in EMI Context

The adoption of Artificial Intelligence (AI) technologies in teaching English as a Medium of Instruction (EMI) marks a significant shift in the pedagogy of teaching within the sphere of global higher Education. To construct a comprehensive understanding of this phenomenon, An international literature review is warranted for the three following reasons: (1) the sociolinguistic context of the region impacts the effectiveness of AI adoption (Macaro, 2022); (2) analyzing multiple contexts is important to identify universal possibilities and localized implementation hurdles (Rose et al., 2023); and (3) the ethically balanced educational AI-EMI framework-emergency goals needs more scrutinization (Bannister et al., 2023). These three reasons provide the rational arguments for the following geopolitical synthesis of empirical data.

In Spain, Bannister, Alcalde Peñalver, and Santamaría Urbieta (2023) explored the implications of GenAI technology on English Medium Instruction (EMI) in higher education. They reported a lack of scholarly work on the topic and articulated a clear gap in the research. Still, the authors noted GenAI's capability to improve language learning, content creation, and assessment in EMI. Students' views, attitudes, and utilization of the technology were called out as pivotal areas of further inquiry, along with its influence on student engagement, self-efficacy, and cognitive load. The authors stressed the lack of empirical evidence regarding GenAI's opportunities and challenges in EMI, proposing a theoretical framework for guided exploration. Despite scant evidence, the authors emphasized the transformative impact of GenAI on the evolution of EMI pedagogy.

Spero (2023) examined the use of ChatGPT in the context of access and inclusion in Japanese EMI programs. As reported by students, the experiences were overwhelmingly positive as they facilitated enhanced academic writing and equitable learning. Students did, however, express concern about overreliance on AI and diminished critical thinking skills. While the study recognized AI’s remarkable power to transform English-medium instruction, it also highlighted the risks of simply adopting technologies without thinking through their implications and called for more balanced strategies (Spero, 2023).

Alqarni et al. (2024) studied the perceptions of medical students concerning Chat GPT at the University of Bisha in Saudi Arabia. The outcomes indicated that there was some reception, with users commending the tool's simplistic interface alongside its capacity to summarize multifaceted medical phrases. Students raised ethical worries, especially with problems relating to dependability and precision. More AI-centered critical thinking programs alongside traditional methods were suggested in the study. The authors also voiced concern regarding the lack of multi-site collaboration in the study, indicating the need for more expansive studies (Alqarni et al., 2024).

In China, Luo (2024) interviewed EMI lecturers at Sino-Hong Kong University, regarding the use of computers and AI technology for grammar teaching. There were some reservations as a part of the concerns raised suggested that teachers did not want to be viewed solely as grammar teachers, although they did appreciate the power of computers in correcting errors. Discussed in length was the problem of becoming too reliant on computers and the need for training courses that help integrate such devices into teaching emerged. Luo has shown in his study that there is often tension between teaching the subject content to students in English and providing them with English language support, proposing tailored training for discipline-specific AI use (Luo, 2024).

In 2024, Kikuchi studied the application of generative AI technology in the context of English as a Medium Instruction (EMI) at a Japanese university. The research indicated that students' language comprehension, as well as their engagement with the course, benefited from AI technologies such as ChatGPT, translation and writing tools. However, barriers cautioning against adoption included AI's plagiarism and accuracy issues. Kikuchi emphasized the need to have basic English skills and technological knowledge to use AI tools for teaching purposes. The study suggested that while AI brings many advantages to learners studying through EMI, there is a need for institutional frameworks, risk management strategies and ethical policies to address the potential dangers (Kikuchi, 2024).

Arslan and Curle (2025) explored the connection between EMI and AI in the Turkish higher education context. The study also raised the need to apply further empirical investigations to assess the impact of AI in an EMI classroom and its role in sustainable development. The authors proposed studying the perceptions of EMI instructors and students about the use of AI and its impact on program effectiveness. The study underscored the importance of situational research in using AI in EMI to resolve socio-educational problems (Arslan & Curle, 2025).

1.4.6 Discussing Gaps in The Literature

1.4.6.1. Disparity Between EFL and EMI research Focus

There is a noticeable gap in current research conducted in Algeria, which focuses exclusively on the topic of Artificial Intelligence (AI) in the context of teaching English as a Foreign Language (EFL), overshadowing its consideration in English Medium Instruction (EMI) contexts. This gap continues to exist even after Algeria adopted EMI nationwide in 2019 (Ministry of Higher Education directives). The few existing EMI-focused works, such as Bouzeraa and Aziz's (2024) computer science study at Mila University or Ouarniki's 2023 study, are far outnumbered by EFL-centric studies like Boumaza (2024) and Sebbah's (2025) generative AI research with 150 participants at University of Algiers 2, and Benaicha & Semmoud's (2024) survey of 200 EFL teachers from across Algeria. This unbalanced focus creates a phony scholarly landscape where the role of AI in learning EFL (language learning) is well documented, and the equally important role of AI in language learning (content delivery through English, EMI) is critically under-documented, especially regarding tailored AI interventions in specific disciplines across more than 24 fields in Algeria that have adopted EMI.

14.6.2. Absence of AI-EMI Integration Studies in Algeria

There is a growing concern regarding the implementation of EMI (Amara, 2025; Ouarniki, 2023) and the application of AI in education (Benaicha & Semmoud, 2024), but there is no research in Algeria that considers the intersection of AI and EMI, which is a significant gap. This absence of research is especially concerning because it has been shown that AI technology is capable of tackling many of the common problems associated with EMI, such as understanding the subject matter (Kikuchi, 2024) and writing academically (Alqarni et al., 2024). Algeria's context in higher education—marked by recent EMI adoption (Jacob, 2020), uneven levels of digital infrastructure and AI literacy, and complex multilingual sociolinguistic patterns—calls for dedicated research on the application of AI in addressing EMI delivery constraints. There are no studies on the perceptions of the EMI constituents—Teachers and students—regarding the advantages and disadvantages of the use of AI in Algerian EMI contexts, which highlights the timeliness of this research.

3- Limited Generalizability

The striking and distinctive feature of EMI research in Algeria is the use of single-faculty case studies as the main unit of analysis. This is visible, for example, in STEM-centric studies such as those of Bouzeraa & Aziz (2024) and the computer science at Mila University Centre, as well as Dali Mahammed Zineb, Senouci Ahlam, and Ouali Meroua's (2023) Science & Technology study at Bordj Bou-Arreridj University. Also, the Guenaoui Ines mathematics-centered examination of first-year MCS students and teachers at Belhadj Bouchaib University in 2023, and Boumaza's (2024) ENS Constantine language-centered study.

The limited scope of these studies, although useful for contextual understanding, undermines the variability in the sample and the generalizability of the results because they focus on singular institutional frameworks and homogeneous disciplinary cohorts. The recurrent pattern of small-scale mono-faculty research, evident in recent Algerian works, neglects to consider the regional resource disparities, differing pedagogical needs across disciplines, and the wide-ranging implementation potentials and challenges such regional frameworks entail within Algeria's complex higher education landscape.

4- Disciplinary Imbalance

The Algerian EMI research landscape is overwhelmingly focused on STEM disciplines, as a very high proportion of empirical research is centered on the Science and Technology (ST) and Mathematics and Computer Science (MCS) faculties, including the most recent theses from Ain Temouchent University (Belhadj Bouchalb, 2023) and Bordj Bou-Arreridj University (2023). While this focus provides a glimpse into the technical fields, it ignores the practical implementation gaps in the natural sciences, law, and the humanities. Such disciplinary myopia creates critical knowledge gaps—in starkly contrasting ways—as observed: while AI in technical terminology assists the ST/MCS programs (Bouzeraa & Aziz, 2024), humanities disciplines fundamentally require different methodologies to uphold the integrity of critical discourse when relying on AI (Smith & Anderson, 2023). With EMI now mandated in over 24 disciplines nationally (Ministry of Higher Education, 2023), this enduring disparity persists in the development of tailored frameworks for AI integration into specific disciplines.

5- Single-Stakeholder Focus

Current Algerian EMI research focuses on examining either student perceptions or teacher experiences, leading to a persistent methodological dualism. Bordj Bou-Arreridj University's

2023 thesis on ST faculty and the study conducted by Ines Guenaoui (2023) at Ain Temouchent University work on the former and the study presented by Feriel Benkhettou (2022) at Ahmed Salhi University on the latter exemplify this trend. Such a dualistic model results in partial and incomplete understandings of the AI-EMI ecosystem because it overlooks the self-reinforcing inter-relational systems of teaching and learning from both the educator's and learner's angles. The absence of a dual-perspective approach is baffling, especially when 94% of Algerian EMI lecturers surveyed claimed student language proficiency as the foremost issue (Ouarniki, 2023), while concurrent student studies attribute the primary barrier as the instructional approach (Bouzeraa & Aziz, 2024). This tendency in research ignores comprehensive analyses focusing on the potential role of AI in resolving these inter-collaborative problems, thus providing no strategies for institutions to act upon for unified execution.

1.5 Conclusion

The rapid evolution of English as a Medium of Instruction (EMI) in global higher education, and its recent implementation in Algeria, underscores the growing need to reevaluate instructional strategies through the lens of innovation. This review has shown that EMI is not only a linguistic and pedagogical shift but also a socio-political and economic response to globalization and international academic integration. In Algeria, EMI is meant to reduce Francophone reliance, enhance global competitiveness, and modernize higher education.

In parallel with this development, the rise of Artificial Intelligence (AI) brings new opportunities and challenges in EMI contexts. For example, AI tools such as chatbots and intelligent tutoring systems can enhance learner engagement, individualize instruction as well as facilitate assessment processes. However, they also pose issues regarding academic integrity, overdependence on them and erosion of critical thinking. Specifically speaking, this review showed that there are limited empirical studies on AI's efficacy in teaching within EMI classrooms with uneven distribution across disciplines and stakeholder perspectives being observed.

However, in Algeria, there is a lack of studies that specifically address AI-enhanced language learning. These works are largely focused on EFL contexts and STEM fields, while humanities and social sciences remain neglected. Therefore, the link between EMI and AI has not been fully explored through interdisciplinary approaches involving multiple stakeholders within Algerian universities. This is remarkable given that there are several nationwide initiatives to promote EMI in Algerian schools alongside an increase in the number of AI-powered educational software.

In conclusion, this study falls into a significant gap. It looks forward to filling this empirical gap by examining perceptions from both lecturers and learners about AI in EMI settings across different faculties. In these ways, it will support theoretical discussions on how artificial intelligence can be integrated into language education as well as practical attempts at developing context-responsive, ethically grounded, and pedagogically sound strategies for higher education institutions in Algeria. Subsequent chapters will then utilize this preliminary understanding to explore insights on perceptions, challenges and opportunities emerging from the interface of AI-EMI within real institutional situations.

Chapter Two:

Methodology

2.1. Introduction

This chapter outlines the methods used to explore the integration of AI into English as a Medium of Instruction (EMI) within higher education, focusing on the teachers' and students' perceptions at BBA University. Grounded in the theoretical foundations established in the literature review, the study aims to critically analyze the emerging benefits and concerns, as well as the perceptions toward AI technologies within the framework of EMI instructional practices. The study aims to address the integration purpose that will offer the fundamental strategies that would meet the gap between the expectations and the needs of educators and learners. To accomplish this, the research revolves around two primary questions.

1. What are the perceptions of teachers and students regarding the integration of AI in EMI contexts at BBA University?

2. What are the perceived benefits and concerns associated with the use of AI in teaching and learning within EMI classrooms?

Through addressing these questions, the research aims to gather valuable information that can facilitate the effective incorporation of AI in higher education. The methodology helps to achieve this goal robustly by employing organized data gathering, in-depth critique, ethical frameworks, and maintaining rigor around the validity and reliability of the results. In this chapter, the researcher describes the rest of the research design, data collection and analysis procedures, and limitations. They provide the information needed to assess the scholarly rigor and practical relevance of the study.

2.2. Research Paradigm

The philosophical foundation of this study is rooted in interpretivism, a paradigm that prioritizes the subjective meanings and lived experiences of people in social settings (Crotty, 1998). Considering the study's goal of understanding teachers' and students' perceptions, advantages, and apprehensions concerning AI in EMI classroom(s), interpretivism serves as an appropriate paradigm. This paradigm acknowledges that human experiences are not monolithic but are shaped by personal, cultural, and institutional factors, necessitating an in-depth examination of how participants construct meaning around AI adoption in educational settings (Creswell & Poth, 2018).

By adopting an interpretive stance, this study recognizes that perceptions of AI in EMI are not merely objective realities but are mediated by individual beliefs, pedagogical values, and contextual constraints. Such an approach allows for a nuanced understanding of the complexities surrounding AI's role in language-mediated instruction, capturing both its transformative potential and the reservations it may evoke.

The rationale behind using qualitative techniques, including interviews and open-ended questionnaires, is captured through the interpretive lens which highlights the scope and richness of the participant's views. Such coherence between paradigm and methodology highlights how the findings of the study are not only valid in a stringent sense, but are also valuable in terms of their context, thus enabling meaningful AI integration in higher education.

2.3. Research Design

This study's research design is qualitative since it attempts to interpret social phenomena based on the participants' experiences, perceptions, and meanings. In this case, qualitative research is best suited to exploring AI with educational stakeholders—ChatGPT, Grammarly, and Duolingo—within the English Medium Instruction (EMI) framework. This particular design captures the rich stakeholders' perspectives concerning the ethical AI adoption challenges (like academic integrity and overdependence) and the corresponding pedagogical responses (like personalized feedback and adaptive content) (Selwyn, 2019; Warschauer & Grimes, 2008). It is particularly useful for analyzing the perception of AI, which is highly subjective, given personal experiences, institutional contexts, and cultural frameworks regarding technology (UNESCO, 2021; Zawacki-Richter et al., 2019). The flexibility of qualitative research design permits responsiveness to new insights, such as changing institutional attitudes concerning generative AI tools, including ChatGPT and new institutional models for AI literacy frameworks (Fitria, 2021; Özkan, 2024). As this emphasizes the context and the social construction of knowledge, it accounts for how human-centered AI principles (UNESCO, 2024) and contextualized educational frameworks inform stakeholders' experiences and provide practical solutions toward the balance between AI's pedagogical potential and the integrity of teaching in English Medium Instruction (EMI) environments.

2.4. Research Setting

The research setting denotes the physical, social, and institutional environment in which an inquiry takes place, including the spatial milieu, time frame, and socio-cultural context for data collection (Jain, 2023).

This study was conducted at the Mohamed El Bachir El Ibrahimi University of Bordj Bou - Arréridj. This university has a broad range of faculties that increasingly embrace EMI. The study involves several faculties to capture a wide array of perceptions on the use of Artificial Intelligence within an EMI framework.

Faculties Involved

- Faculty of Science and Technology(ST) : Encompasses Physics, Chemistry, and Engineering departments.
- Faculty of Mathematics and Computer Science (MCS): Includes Applied Mathematics and Computer Science.
- Faculty of Life and Natural Sciences (LS): Incorporates Biology and Environmental Science.
- Faculty of Law and Political Science (LP): Covers International and Commercial Law.

2.5. Sampling Strategy

The sampling strategy in this study seeks to address the Limited Generalizability, Disciplinary Imbalance and the single-stakeholder focus gaps cited in the literature review. The primary participants are teaching staff and learners from various faculties within a university who have encountered the integration of AI into EMI classrooms. To achieve full representation, the participants were drawn from four major faculties of Bordj Bou-Arreridj University: Science and Technology, Nature and Life Science, Mathematics and Computer Science, Law and Political Science. The sample frame comprises seven EMI tutors and 120 students from the four faculties. This approach, although cross-disciplinary, serves to enrich the diversity of the participants within the academic framework where AI tools are being used in English-medium instruction.

Through crossover sampling, this approach particularly addresses the "Disciplinary Imbalance" gap while the imbalance stems from Algerian EMI studies focusing solely on STEM disciplines. The inclusion of both technical and non-technical faculties adds to the comprehensiveness of understanding AI implementation in academics across contexts. Moreover, the sample includes both teachers and students, which allows full consideration of the "Single-Stakeholder Focus" gap where prior analyses regarded only one of the two constituents—teachers or students—without considering the other. As outlined in the above description, purposeful sampling serves as the primary selection strategy, aligning with qualitative research frameworks (Creswell & Poth, 2018). Through this non-probability

approach, it was possible to specifically focus on participants with firsthand experience working with AI in EMI contexts. Teachers were selected based on their use of AI in teaching, while students were selected based on their use of AI in EMI courses. The Interview included both in-person (n=2 teachers) and online respondents (n=5 teachers).

Participant Recruitment. To engage EMI teachers from Bordj Bou-Arreridj University, a consent document was sent to them via email (refer to the Appendix of the consent). That served as a thorough document summarizing the research goals, describing the study in detail, stressing voluntary participation and confidentiality of data, and providing the researcher's contact information for any questions. From an ethical standpoint, the EMI teachers were granted autonomy and given informed consent regarding the research. This ensured that the participants were informed of the research being undertaken, its background, purpose, and their expected contribution. The consent form enabled them to agree freely to participate, while also granting the freedom to withdraw at any time without any consequences. For students, the process was slightly different. They were directly approached in their respective educational settings after obtaining permission from their tutors. This ensured that their participation was authorized and aligned with the protocols and guidelines of the educational institutions.

Despite purposeful sampling providing in-depth and context-rich data, some limitations must be integrated. The sample, while considering participants from different faculties, does not capture all interdisciplinary viewpoints on AI in EMI contexts. Furthermore, the self-selection factor of voluntary participation may lead to some form of response bias. These restrictions are dealt with through clear explanative reporting of participant demographics and analytic methods in the results sections. The next section outlines the tailored data collection instruments that were developed for this purpose.

2.6. Data collection :

In order to investigate the attitudes of teachers and students towards the use of Artificial Intelligence (AI) in English as a Medium of Instruction (EMI) classes in higher education, a mixed-methods form of data collection was utilized. This approach provided opportunities for more in-depth and multi- faceted understanding by enabling cross-checking of information from different sources. Two complementary instruments were developed, one quantitative and one qualitative- a questionnaire for the students and semi-structured interviews with the teachers. These methods were purposeful in that they sought to balance the comprehensive capture of student views with the detailed exploration of teacher perspectives on the influence

and integration of AI within EMI frameworks. The interactive nature of interviews also enables them to probe deeper into specific areas of interest, ensuring comprehensive data collection.

Questionnaires, on the other hand were utilized with university students to obtain a broader understanding of their perceptions and experiences related to EMI, questionnaires provide a structured approach for collecting quantitative data, allowing for the examination of patterns, and generalizable acumens across a larger sample size. By utilizing standardized scales and open-ended questions, questionnaires enable efficient data collection and facilitate statistical analysis, enhancing the generalizability of findings to a larger population.

Interviews : The interviews with teachers were conducted in their own settings on a one-to-one basis. According to Creswell (2014), this approach ensures that the participants are less likely to be distracted or disrupted by external factors, allowing them to concentrate more on the topic of discussion. By conducting interviews in the participants' own settings, the researcher can gain a better understanding of their teaching context and perceptions, which can provide valuable insights into the research topic. During the interviews, a semi- structured interview guide was employed as the tool. The interview guide comprised 19 open- ended questions specifically designed to explore the experiences, challenges, and perceptions of 7 teachers regarding artificial intelligence integration in EMI classrooms in higher education.

Questionnaires : The questionnaire was designed to collect information from students about their experiences and perceptions regarding the integration of AI in EMI classrooms at an Algerian university. It comprised 19 questions, including a combination of open-ended and closed-ended questions (such as Yes/No questions and multiple-choice questions). Additionally, a justification space was provided to allow students to elaborate on their responses.

The open-ended questions allows respondents to provide more detailed, narrative answers, contributing qualitative data. The Closed-ended questions limits the response options to the provided list and allows The inclusion of a justification space in closed-ended questions encourages participants to expand on their previous responses and provide specific details about the factors that influenced their decision (Jovancic, 2021).

This combination of questions offers deeper insights into participants thoughts, motivations, and reasoning, enriching the qualitative data. The questionnaire was administered in person, ensuring a confidential and comfortable environment for each student. The surveys

administered to the students were done so in-person so that each participant would be able to respond in a confidential and comfortable environment. This approach applied to all, and aimed to produce the desired outcomes that were in line with the population and the goals of the research.

2.7. Data analysis:

In this study, a substantial attempt to investigate the primary components of meaningful insights offered by the collected data was performed. The qualitative portion of data was analyzed using the well-known technique of thematic

analysis as outlined by Braun and Clarke (2019). Thematic analysis enabled the identification and consideration of patterns, themes, and relationships that are within the qualitative data collected from interviews. Also, 120 quantitative data gathered from the responses to the questionnaires were also collected and included in the analysis. With the integration of these different datasets, an all- inclusive understanding of the topic of research was obtained resulting in valuable findings and conclusions.

Transcription of interviews:

As Have defines 1999, interview transcription encompasses capturing spoken language to create narratives in text form" , The transcription process has several steps which, as Have (1999) noted, include the following:

1. Preparation: Collecting all required materials and equipment for transcribing is the first step. In this case, it is a reliable recording of the interview, a set of quality headphones, a computer with dedicated transcription and word processing software, and Microsoft Word.

2. Familiarization: The audio recording must be listened to several times prior to the transcription. This guides the transcriber in relation to the speakers' voices, accents, background noises, or interruptions aiding in content comprehension.

3. Transcription: By verbatim typing the audio recording into a document, the transcription stage starts. Each segment of the interview should include relevant timestamps to aid in easy reference.

4. Formatting: Every transcript follows a set structure. While maintaining standard writing conventions for proper punctuation, each speaker turn is separated by paragraphs, and speakers are denoted with initials or names.

5. Accuracy and Proofreading : The transcripts underwent a thorough review to confirm that every utterance was accurately transcribed as it had been spoken. Any inconsistencies, spelling errors, or other mistakes made by the interviewees, who in this case were teachers, were left as is so as not to compromise the authenticity of the interview data.

6. Adjustments : Several necessary adjustments were made to enhance the ease of reading and clarity of the transcripts. These adjustments involved improving grammatical accuracy, removal of verbal fluency pauses like um and uh, correcting type and alignment errors, as well as translating portions of the interviews conducted in other languages such as Arabic.

7. Anonymisation : In order to ensure that the privacy and confidentiality of the participants was not breached , identifiable information such as names, specific modules taught, or institutions to which they were affiliated were either removed or anonymized. Each interviewee was given a unique identifier (e.g., Teacher 1, Teacher 2, Teacher 3, etc.) which enabled clear reference during data analysis and reporting while maintaining anonymity.

8. Transcript Quality Assurance : A final check was performed to reconfirm accuracy, structural organization, and adherence to transcription rules. This check ensured that the transcripts had accurately reported the interviews and complied with any preset transcription guidelines (Have, 1999).

With the goal of optimizing access and convenience, all interview transcripts were merged together into one document. This alignment made managing the data much easier, as well as comparing participant responses to ensure all content was cross-evaluated. By having all qualitative data consolidated, it was much simpler to find key themes and motifs among the 7 interviews conducted, thus allowing for a thorough and comprehensive analysis. Such strategies enhanced the rigor and richness of the qualitative inquiry.

Transcribing the audio recordings was one of the basic tasks we undertook in preparing the data. It is important to note that transcription takes time, but the speed can be impacted by factors such as recording quality, speaker clarity, and complexity of the conversation. In an effort to uphold accuracy while improving time, Otter.ai, an automated speech recognition (ASR) software, was utilized. Every transcript generated by the machine was carefully checked for corrections and measures were taken to ensure that transcripts accurately represented the audio files.

After transcribing and integrating the questionnaire information, I performed a thematic analysis based on the framework put forth by Maguire and Delahunt (2017). Their method was

useful because it offered a step by step approach to the recognition, classification, and interpretation of major phenomena in the data set.

1. Familiarisation with the Data:

• This stage entails getting to know the data by reading and rereading transcripts or other qualitative documents.

• This step deepens a researcher's grasp of the studied material.

• During this phase, you are free to begin documenting first impressions or preliminary frameworks and observations.

2. Generating Initial Codes:

• At this point, the investigator actively looks for notable attributes within the data and documents them as codes.

• Codes are primitive identifiers or motifs that record relevant fragments of information.

• Identification of codes may be done manually or through specialized
qualitative data analysis programs such as NVivo or Atlas.ti.

3. Searching for Themes:

• Once the entire dataset has been coded, the next task is to cluster similar codes into superordinate themes.

• A theme is a defining characteristic which describes a substantial occurrence or phenomena within a given set of data in relation to the objective of the study. Diagrams such as mind maps or thematic tables can serve as an aid in the organization of ideas.

4. Reviewing Themes:

During this step, the themes undergo a refinement process as well as an evaluation for coherency.

The accuracy and precision of focal themes in comparison to the overwhelmingly encoded frameworks undergoes examination. The distinction between these labeled focal themes is also checked if they are to be regarded as starkly different. Themes may be merged, split, or discarded.

5. Defining and Naming Themes:

Every theme is clearly defined and named after the last themes were adjusted and finalized. This involves articulating the essence of what each theme represents and how it relates to the overarching research questions. Each Theme is substantiated by detailed quotes and samples from the data.

6. Writing the Report:

An analysis narrative composed of the themes needs to be coherently weaved around the stated objectives of the research. As previously stated part of this is selecting appropriate excerpts and explaining the relevance of each theme while relating to other findings.

Visual representations of data :

In order to increase the clarity and effectiveness of the qualitative data analysis, visual aids such as bar graphs and pie charts were added to the qualitative data analysis and findings. These graphical aids helped in showing the ratio and the number under the theme or category which were derived from the data. The pie charts showed the different portions of responses given, and the bar graphs made it simpler to compare the amount of some categories or themes to others. Though most attributed such visualizations to quantitative research, the accompanying logic and rationale suggests they can be adapted, in fact, to qualitative research to aid better interpretation and communication of results. As Bryman (2016) notes, "while pie charts and bar graphs are typically associated with quantitative data, these tools can be used for qualitative data to enhance the present and understanding of the findings."

Pie charts : Denscombe (2010) describes a pie chart as a circular diagram which is divided into sectors that represent different portions of the data. Each sector illustrates a piece of the entire circle and showcases how much of the whole a specific category comprises. As noted by Study Smarter (n.d.), categorical data must first be transformed into a percentage for it to accurately represent proportionate value while displayed on a pie chart. It is important that the sum total of these categories remain 100 so that the complete pie does not lose its form.

Calculating Percentages for a Pie Chart :

To calculate the percentage for each category:

1. Add up all the values (e.g., total number of participants).
2. Divide each category's value by the total.
3. Multiply the result by 100.

Bar graphs :

Denscombe (2010) notes that bar graphs, or bar charts, are used frequently and form one of the most popular methods of presenting frequency data, especially within small scale research projects. They are most useful in representing nominal and discrete data because comparisons between categories are straightforward. The underlying concept of a bar chart is to represent each category by a bar of constant width, where the height of the bar indicates the frequency or value related to that category. It is the convention that spaces are left between adjacent bars to illustrate that the data are categorical, not continuous. According to StudySmarter (n.d.), in

a bar graph, the x- axis is split into categories, or groups to be compared while the y-axis holds a single numerical value which is commonly the frequency or tally of the responses. Thus the height of each bar is determined by the value representative of its category, and therefore, the quantities can easily be compared. Bar graphs represent categorical data efficiently due to the simplicity and clarity which is why they are held in high regard. In addition, they provide a succinct summary of the distribution of responses, and visually emphasize essential order or differences that exist between the categories.

As previously explained, all data will be analyzed using the appropriate quantitative methods. Each of the students were tasked and given a project of research on a topic in Julius Caesar, which they then presented to class. Using the assigned criteria and listening to the other presentations, I classified them into their respective groups. The classification system was useful because Denscombe (2010) argued that qualitative classification aids in text analysis and renders it easier to understand as opposed to simply reading through it. Moving on from discussions regarding methods, in the succeeding paragraphs, the author will highlight the notable issues dealing with the concepts of parallelism, spelling and other marking identity issues that have been flagged within the data set. The author has reported the processes that were undertaken to flag the issues that arose whilst working on the dataset and all extra data that were identified.

Validity and reliability :

Qualitative research as defined by its specific criteria includes trust and credibility as components which Poduthase (2015) highlights in regards to qualitative research. Trust-raising strategies are usually cited by researchers in various forms as listed by Poduthase such as:

1. Triangulation :

This involves using more than one source of data, method, theorist or investigator to validate a finding.

2. Member Checking :

This is synonymously known as participant validation. It consists of returning interpretations, data, or findings to participants to attest accuracy in regard to their experience.

3. Thick Descriptions

This entails comprehensive detailing of the context, participants and findings in thick descriptive configurations that allow the readers to make a judgment on its transferability.

4. Audit Trail :

Involves explicit documentation of all steps in a study, including the decisions made, data collection, and analysis, ensuring clarity and reliability known as dependability.

5. Reflexivity :

Conscious critical self-evaluation of the researcher's biases and assumptions and how such elements exerted an influence within the framework of the study.

6. Peer Debriefing :

Engagement with colleagues, or other experts, not involved in the study to critique its data, methods, and interpretations. These strategies align with the Lincoln and Guba (1985) framework of trustworthiness which poduthase (2015) draws from.

2.8. Ethical considerations :

The perceived integration of AI technologies within English as a Medium of Instruction (EMI) classes by both students and teachers serves as the primary focus of this investigation. In conducting this research, I implemented strict ethical research protocols in protecting the rights of the participants involved. Each of the following ethics concerns is listed in relation to how each provided specific protections for participants' privacy, safety, and the technical ethics of the research conducted.

1. Consent:

All teachers that were interviewed in this investigation provided voluntary signed consent. Participants were given an information sheet detailing the purpose of the study, its procedures, potential risks and benefits, and their rights. A signed consent form confirmed agreement to participate, and where necessary, translated materials and additional aides ensured complete understanding.

2. Confidentiality and Anonymity:

All responses and personal information collected for the purpose of this research remained confidential. Anonymity was granted through the secure storage of interview transcripts, audio recordings, and questionnaire responses on password-protected devices. Pseudonyms replaced real names during reporting and analysis to preserve identity. Only the Principal Investigator and other designated members of the research team had access to the identifiable raw data.

3. Voluntary Participation and Right to Withdraw:

In relation to this study, participation was entirely voluntary. Participants were made aware that they can choose to withdraw from the study or skip answering any questions at any point without facing any consequences. This autonomy was highlighted both in the documentation and in the briefings conducted orally prior to data collection.

4. Risk and Emotional Well-Being Minimization :

Despite the fact that the research topic posed minimal risk, there was consideration for discomfort that might arise from discussing personal experiences with AI in education. Participants were guaranteed the right to pause or stop the interviews at any point. There was also provision for support resources, like contact details of school counselors or academic advisors, for participants who felt some distress either during or after the sessions.

5. Researcher Integrity and Reflexivity :

The researcher ensured that objectivity and openness were upheld in all stages of the research. Reflexive strategies were applied to identify and counter any biases and assumptions, perceptions, or beliefs that stand to influence the interpretation of data. Credibility and trustworthiness of the findings were established through peer debriefing and triangulation.

6. Administrative Permission and Institutional Approval :

Ethical approval was sought and obtained from the appropriate institutional review board (IRB) or ethics committee prior to the commencement of the study. Moreover, appropriate permissions were obtained from concerned school or university officials to undertake research activities such as participant recruitment and accessing relevant classrooms. These actions took care of all institutional and legal requirements.

7. Data Protection and Storage :

All collected data were safeguarded in compliance with data protection regulations (e.g., GDPR or local equivalents). Digital records were encrypted and kept on protected servers, while physical documents, including signed consent forms, were stored in locked filing cabinets.

Data will be retained only as long as necessary to complete the study and then will be securely shredded.

2.9. Research limitations :

While every effort has been made to design a robust research methodology, there are some potential limitations and biases that should be acknowledged in this study on exploring teachers and students perceptions on AI integration in EMI classrooms .

Time constraints :

One of the key limitations of this study was the restricted time frame allocated for data collection. The limited time available may have constrained the amount of data that could be collected, potentially impacting the depth and comprehensiveness of the findings. Additionally, the inclusion of four faculties aimed to cover a range of perspectives and enhance the representativeness of the results. However, conducting data collection within a short period, particularly nearing the holidays, may have imposed time constraints and potentially influenced

the participation and availability of participants. It is important to acknowledge that while efforts were made to gather diverse perspectives, the experiences and perceptions of teachers and students in these specific faculties may not fully capture the diversity present across all Algerian HE institutions.

Limited access to literature :

The limited access to literature affected the comprehensiveness of the review and synthesis of existing knowledge. Factors such as time constraints, restricted library resources, and limited access to academic databases hindered the retrieval of all relevant scholarly articles and studies on exploring teachers and students perceptions on AI integration in EMI classrooms . As a result, the study may not have captured the entirety of the current knowledge and research findings in this context, potentially leading to a narrower scope of information and a potential bias in the interpretation of the findings. The omission of certain studies and perspectives from the literature could have impacted the depth and comprehensiveness of the discussion. Moreover, the limited access to literature hindered the ability to compare the findings with existing studies, affecting the generalizability and external validity of the research. Efforts were made to overcome this limitation by exploring alternative sources, such as open-access journals and online repositories, as well as publications from local conferences or institutions. However, it is important to acknowledge that the limited access to literature may have restricted the breadth and depth of the study. Limited access to literature. The limited access to literature affected the comprehensiveness of the review and synthesis of existing knowledge. Factors such as time constraints, restricted library resources, and limited access to academic databases hindered the retrieval of all relevant scholarly articles and studies on this research . As a result, the study may not have captured the entirety of the current knowledge and research findings in this context, potentially leading to a narrower scope of information and a potential bias in the interpretation of the findings. The omission of certain studies and perspectives

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Generalisability :

The lack of variety in the sample limited the wider population of teachers and students across Algerian universities, thus generalisability to other contexts is restricted. Therefore, the scope of the study's conclusions is limited to a few faculties and does not extend to all Algerian institutions of higher learning. Furthermore, the focus of the investigation was a small subset of faculties which may not reflect the comprehensive landscape of universities in the country and therefore could be biased.

To some degree, the problem was addressed by trying to create a balanced sample with respect to the study's demographic factors such as geographical area, age, sex, and other relevant variables. The intention was to improve the variety of the sample and include different perspectives. However, while these selected faculties provided rich data, the insights generated from this sample may not be generalized to all faculties of Algerian universities.

Bias :

The use of purposive non-probability sampling methods could introduce potential bias in this study as participants were selected with particular characteristics in mind rather than through random selection. The personal and unconventional nature of these criteria may have shaped the individuals who were included in the study which impacts the representativeness of the sample and, as a result, the generalisability of the findings. Addressing these gaps in the methodology used strengthens the trustworthiness of the research in relation to its transparency. This form of transparency enhances the rigor of the research, demonstrating that the authors acted in good faith and attempted to analyze the data as objectively as possible.

Conclusion :

This chapter details the methodology employed to explore teachers' and students' perceptions of AI integration in English as a Medium of Instruction (EMI) at BBA University. Adopting an interpretivist paradigm and a qualitative research design, the study uses interviews and questionnaires to gather data from diverse faculties. Thematic analysis will be used to understand the benefits and concerns of AI in EMI, with a strong emphasis on ethical considerations and ensuring the validity and reliability of the findings.

Chapter Three :

DATA ANALYSIS AND INTERPRETATION OF RESULTS

3. DATA ANALYSIS AND INTERPRETATION OF RESULTS

3.1 Introduction

Previous chapters have established the theoretical framework through a comprehensive review of literature pertaining to English as a Medium of Instruction (EMI) and Artificial Intelligence (AI) in educational contexts, while also delineating the methodological approach employed in this investigation. In this chapter, the results of a qualitative study on the teachers' and students' perceptions of AI integration in EMI classrooms at Algerian universities are analyzed. The research aims to examine the advantages, challenges, and best practices of the use of AI in enhancing EMI instruction. This chapter answers the research questions on AI application in EMI through a detailed evaluation of the findings.

The research methodology included interviews and questionnaires with teachers and first-year EMI students from four different faculties at Mohamad El Bachir El Ibrahimi University regarding the benefits, concerns that are related to the integration of AI tools in EMI contexts. All results are verified through empirical data collected from the identified research instruments,with a particular focus to the differences across disciplines

In the next section, the analysis will focus first on interpreting the respondents' questionnaires by investigating the perceptions, the usage patterns of AI tools and their perceived benefits and concerns. After this, the analysis will discuss the data from the teachers' interviews about the advantages, disadvantages, and institutional obstacles to AI tool integration in teaching. This two-part structure equips the reader with holistic insights into the experiences of the learners and the views of the educators in the context of AI-enhanced EMI.

3-2 Data Analysis

3.2.1 Analysis of Student's Questionnaire

Section A : Background Information

Demographic data were collected without requesting personally identifiable information, ensuring participant confidentiality and anonymity. This approach encouraged candid responses while protecting participant privacy.

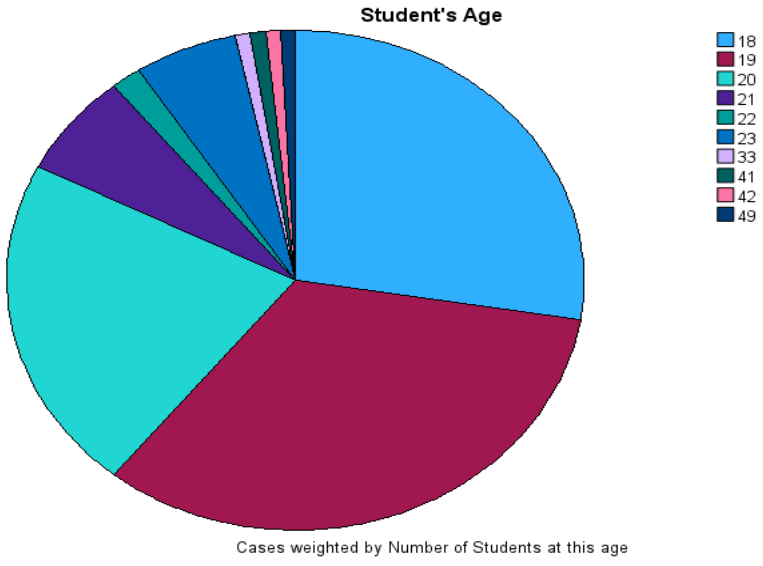
• **Q1: Age**

Table 3.1 Students' Age

Age	Frequency	Percentage
18	33	27,5
19	40	33,3
20	26	21,7
21	8	6,7
22	2	1,7
23	7	5,8
≥33	4	3,3
Total	120	100.0

As shown in Table 3.1,the largest age group in the sample is 19 years old (33.3%), representing 40 students out of 120. They are followed by 18-year-olds (27.5%) and 20-year-olds (21.7%). The 21-23-year-old age groups show progressively smaller representations (6.7%-5.8%), while the older students (≥33 years) show an even more diminished figure (3.3%).

Figure 3.1 Student's Age



•Q2: Gender

Table 3.2 Student's Gender

Gender	Frequency	Percentage
Male	55	45,8
Female	65	52,2
Total	120	100.0

Table 3.2 presents the gender distribution of the 120 participating students across four faculties. Revealing a balanced yet statistically significant female majority. Female respondents accounted for 54.2% (n=65) of the sample compared to 45.8% male representation (n=55) .

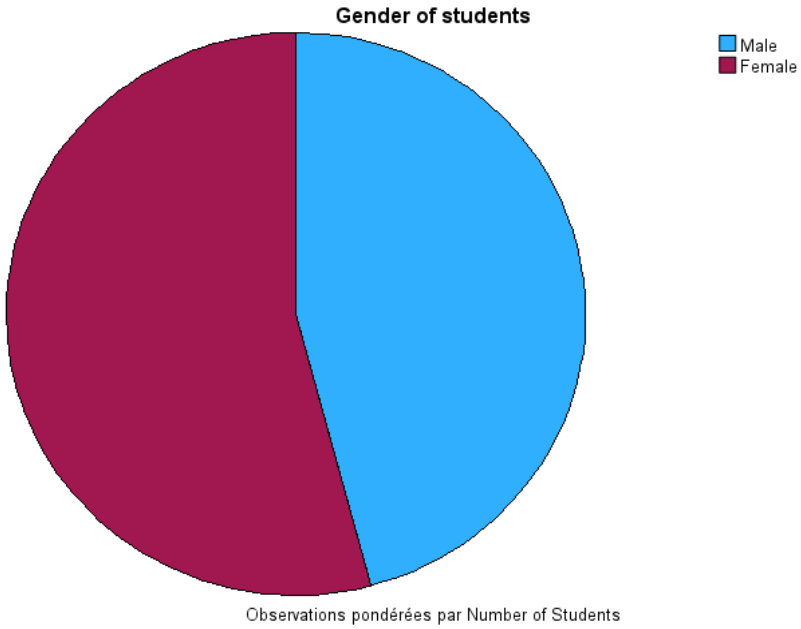


Figure 3.2 Student's gender

Q3: Specialty

Table 3.3 Student's academic specialities

Faculty	Frequency	Percentage	Year of study
Science & Technology	30	25,0	First Year
Nature & Life Science	30	25,0	First Year
Mathematics & Computer Science	30	25,0	First Year
Law & Political Science	30	25,0	First Year
Total	120	100.0	

The sample consisted of 120 first-year students from four faculties with 30 students per faculty to achieve a balanced representation. All participants were first-year undergraduate students, minimizing variation due to academic experience.

Q4: Have you taken courses where English was the primary language of instruction?

Table 3.4 Student's answers on Prior Experience with EMI

Response	Frequency	Percentage
Yes	106	88,3
No	14	11,7
Total	120	100.0

As illustrated in Table 3.4, a significant majority of respondents from BBA University, 88.3% (n=106), reported prior exposure to English as the medium of instruction (EMI)

classes. On the other hand, 11.7% (n=14) reported no prior exposure to courses taught through EMI. This substantial proportion strongly emphasizes that EMI is far from a hypothetical construct, but rather an instructional framework that has permeated the students' educational trajectory, before and during their studies at BBA University.

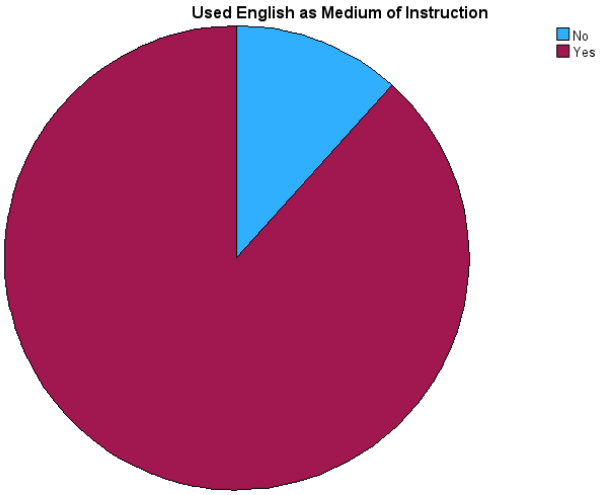


Figure 3.3 Student's answers on Prior Experience with EMI

Q5: If Yes , for how many semesters/ Years ?

Table 3.5 Student's answers on the duration of Prior EMI Exposure

Duration	Frequency	Percentage
1 Semester	4	3,3
2 Semesters	102	85,0
Total	106	88,3
Missing	14	11,7
Grand Total	120	100.0

Among the 106 BBA University students previously exposed to EMI, nearly all (n=102, 96.2%) reported a full two semesters of exposure, with only 3.8% (n=4) having one semester.

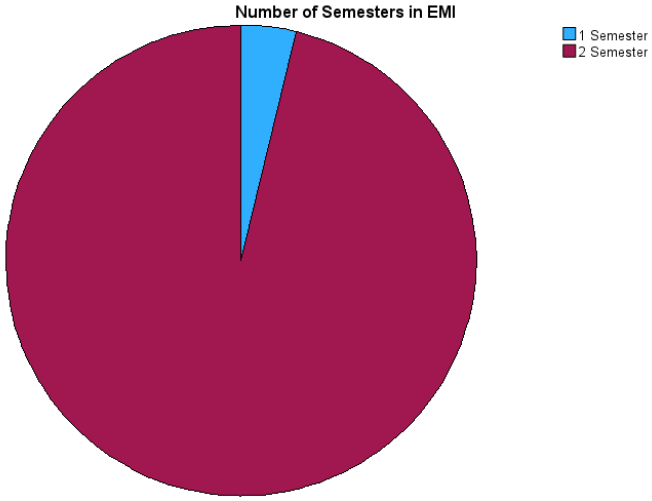


Figure 3.4 Student's answers on the duration of Prior EMI Exposure

Section B: Al support for comprehending English materials

1- Students Challenges in EMI Learning

Academic and Specialized Vocabulary Acquisition

Students from all four faculties raised the concern of terminology across disciplines more than once. Law students pointed out issues like, "understanding academic vocabulary" (P2-law-female) and, "complex legal academic vocabulary " (P3-law-female). Equally, students of Science and Technology expressed challenges with, "understanding the scientific terms" (P1-ST-female) as well as, "the complex academic scientific terms" (P9-ST-female). Students from Mathematics and Computer Sciences testified to "hard complex vocabulary that deals with math and computer science" (P4-MCS-male) and "vocabulary of math" (P11-MCS-male). LS students have also reported, "Difficulty in understanding words, particularly scientific terminology" (LSS8). There is strong corroboration of these student accounts from EMI instructors; an ST teacher expressed that students, "don't know the technical words in English" (T1). An LS teacher also highlighted, "considerable hurdles with technical vocabulary" (T4). Math and Computer Science (MCS) teachers confirmed that students "Lack the domain terms related to math" (T7) and face "difficulties in connecting the maths words and ideas in English" (T6).

Listening and Reading Comprehension

For students, one of the challenges faced was understanding the spoken and written content of English as a Medium of Instruction (EMI). Law students expressed issues such as difficulty in understanding different English accents (P1-law-female) and "not understanding some lectures" (P3-law-female). ST students also seemed to have challenges with "understanding lectures, reading the content presented" (P4-ST-female) and "not being able to understand the language itself" (P7-ST-female). MCS students reported as well that they "don't understand the language" (P10-MCS-male) and "struggle in listening and understanding the language especially when the teacher is using more than one accent" (P15-MCS-male). LS students also cited "Difficulty understanding academic content." These teachers themselves noted the gaps in comprehension skills; an ST teacher (T2) observed students "struggle with understanding instructions" and "Misunderstanding of key physics concepts due to language barriers." An LS teacher (T5) critically stated, "The majority fails to grasp lesson content delivered in English, forcing repeated Arabic translations to ensure understanding," emphasizing the seriousness of the problems. An MCS teacher (T7) stated, "They encounter several difficulties in understanding," and also confirmed the claim.

Speaking Fluency and Oral Communication

Students shared challenges regarding the use of English. Law students noted "not being able to speak fluently" (P4-law-female). ST students stated, "don't know how to write and speak in English " (P3-ST-female) and "not being able to communicate" (P5-ST-female). With MCS students, "I can't speak English fluently" (P1-MCS-male) and "can't communicate well" (P7-MCS-male). LS students voicing "I Struggle in speaking clearly and confidently" resemble the EMI instructor's observations of these communication barriers. An ST teacher (T1) described students "can't communicate and explain in English" and (T2) noted "Reduced participation and interaction" culminating because of language limitations. LS teachers (T4) similarly comment on "hesitancy in speaking" and the inability to articulate scientific arguments in English.

Grammar and Sentence Structure

Students recognize a specific lack of the English foundational grammar rules and the construction of grammatically correct sentences. Law students expressed "not being able to build a correct strong sentence in English" (P11LPF), while ST students referred to "hard

grammar and rules" (P10STF). LS students identified "Problems constructing sentences" also posed by teachers. An LS teacher (T4) describing students' "hurdles with constructing coherent sentences" suggests deeper grammatical deficiencies impacting broader communication skills.

Q2 : Have you used any Al tools to help you overcome these challenges? For your EMI courses or in other contexts?

Table 3.6 AI Use by Students

Response	frequency	Percentage
Yes	113	94,2
No	7	5,8
Total	120	100.0

Table 3.5 illustrates the self-reported frequency of AI tools usage by students enrolled in English as a Medium of Instruction (EMI) courses. The data sets are indicative of an overwhelming utilization of AI tools by the surveyed population. To elaborate, 94.2% (n=113) of EMI students self-reported using AI tools for difficulties encountered during EMI learning, or in other academic-related activities. In stark contrast, a mere 5.8% (n=7) did not engage with such tools. This drastic overwhelming response indicates that AI tools have become integral, if not omnipresent, in the modern-day learning approaches AI utilized by EMI students in Algerian higher education.

The students' reported high usage is further validated by EMI instructors' comments. In the interviews, all participants confirmed the pervasive use of AI tools by students for EMI modules. For example, Teacher 7 (T7) from the MCS faculty was very clear stating, "definitively, yes they do and for several times," which affirms the reporting. Teacher 1 (T1) and Teacher 2 (T2) from the ST faculty stressed, "Yes, they do for sure" and "Yes they do," respectively, highlighting the commonality of this behavior among their students. Teacher 3 (T3) from the ST faculty also stressed the point stating, "Yes they do."

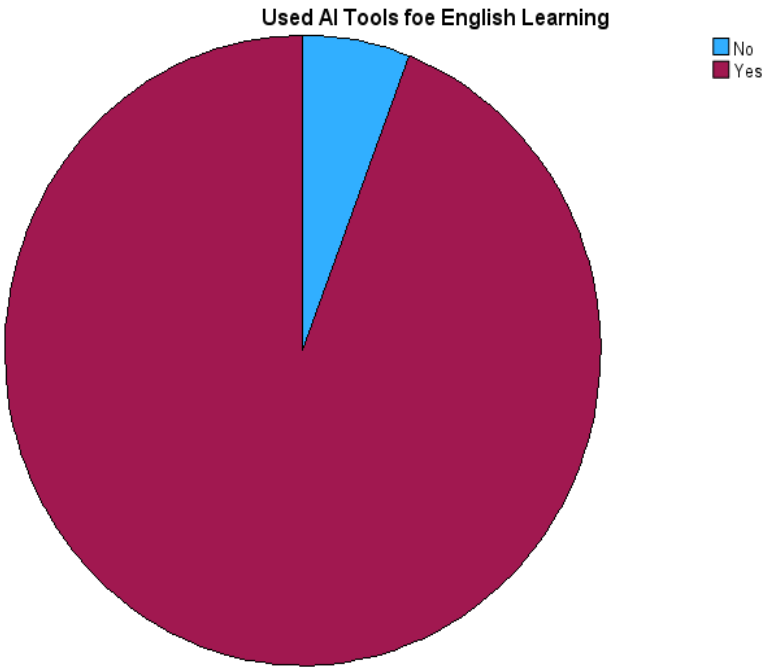


Figure 3.5 AI Use by Students for learning

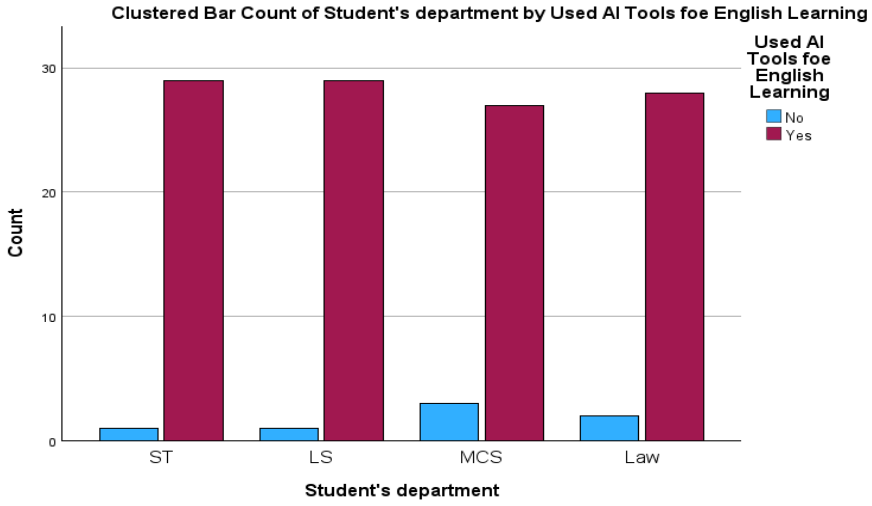


Figure 3.6 AI Tool Utilization Across Faculties

As shown in Figure 3.6, AI tool usage among students from different faculties at EMI shows a high overall utilization. ST and LS faculties exhibited the highest usage (29 students each), followed by Law (28), with MCS reporting the lowest (27). Out of the total, only seven students did not engage with AI tools—three from MCS, two from Law, and one each from ST and LS.

Nevertheless, this quantitative evidence directly opposes some educators' beliefs. For example, T7, a female teacher from LS, was convinced that her students enrolled in MCS disproportionately leveraged AI tools compared to students from her discipline, claiming: "My students do use AI, but I don't think they use that much because their field requires more lived examples and teachers' explanations of the concrete concepts not like MCS students who I think use AI more." While capturing an instructor's perspective, this qualitative remark stands in stark contrast to the AI usage figures for MCS students in Figure 3.6, which show that MCS students have the lowest reported AI tool usage among all four faculties. This divergence exposes an important issue regarding the absence of understanding of educators concerning students' digital learning environments and practices. Grasping these patterns of AI utilization, especially within a specific faculty, is essential for designing appropriate adaptive instruction pathways and frameworks, highlighting the importance of empirical data in developing strategies for AI integration in EMI classrooms.

Q4: How Often do you use AI Tools to deal with EMI content ?

Table 3.7 Frequency of AI Tools Utilization (n=113)

Frequency	**Frequency**	**Percentage**
Rarely	3	2,7%
Sometimes	14	12.4%
Often	21	18.6%
Very Often	75	66.4%
Total	113	100.0%

Note: Then"Never" category was omitted as it received zero responses

The information presented in Table 3.7 and Figure 3.7 demonstrates that among the students who reported using AI tools, their utilization frequency of AI tools for EMI content is exceptionally high. A considerable proportion, 66.4% (n=75), reported using AI Very Often. If we consider those who use it Often (18.6%, n=21), then about 85% of AI-using students use

these tools frequently. Only a small minority use AI Sometimes (12.4%, n=14) or Rarely (2.7%, n=3), and no student reported a Never response.

The very high number of students using AI suggests that those students learning through EMI have a strong dependence on these tools. It indicates that AI is not simply an ancillary tool but rather an integral component that helps them learn and deal with EMI difficulties. The consistency and the pervasiveness of such engagement reinforce the strong need to look into perceptions and issues raised by students, for such frequencies point to a fundamental embedding of AI into their academic activities.

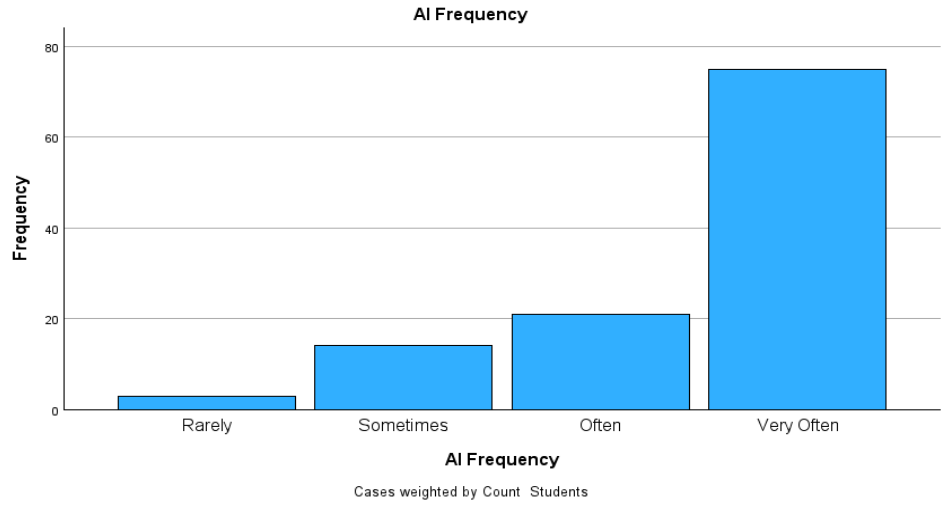


Figure 3.7 Frequency of AI Tools Utilization

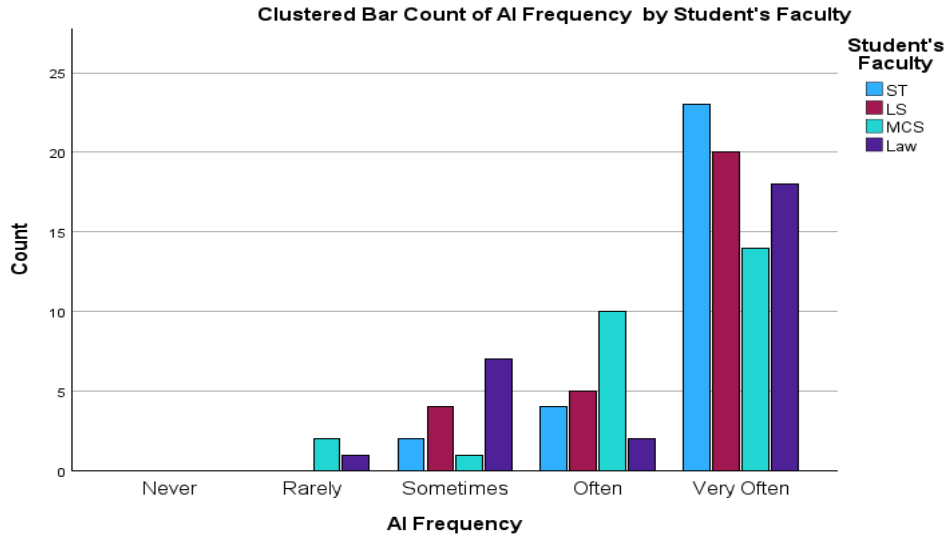


Figure 3.8 Frequency of AI Tool Utilization by Faculty

respective faculties. The observed patterns in AI tool utilization frequency across faculties corroborate earlier findings on overall AI adoption. For instance, ST and LS faculties, which have the highest rates of AI adoption, also show the highest frequencies of Very Often use (23 St & 20 LS students). The Law Faculty has around 18 students using AI Very Often, which is a substantial number, but this faculty also has a significant representation in the Sometimes category (around 7 students). On the contrary, most low-adopting MCS faculty also exhibit low Very Often usage and a greater presence in the Rarely and Sometimes categories. This dual consistency within adoption, frequency, and engagement strongly emphasizes that learners' perceptions and perceived utility of AI tools are directly reflected in the intensity of their engagement, reinforcing the need for tailored strategies aligned to specific disciplines and their student-inbuilt preferences.

Q5: Please indicate the Al-powered tools you have used to support you in your learning

Table 3.8 AI-Powered Tools Used by EMI Students

AI-Powered Tool Type	Number of Students	Percentage of Total Sample
AI chatbots	92	76,7%
Machine Translation Tools	79	65,8%
AI Powered Vocabulary Apps	60	50,0%
AI Powered Grammar & Spell Checkers	20	16,7%

Note: Percentages are based on the total sample of 120 students; as multiple responses were allowed, percentages sum to more than 100%.

Table 3.8 shows the self-reported use of different AI tools by EMI students to assist them in their learning. The data shows that AI Chatbots (n=92; 76.7%) are the most commonly used, followed by Machine Translation Tools (n=79; 65.8%). Vocabulary learning apps powered by AI are used by 60 students (50.0%). The lowest usage figure AI-powered Grammar and Spell Checkers reported was (n=20; 16.7%).This pattern suggests that students primarily

leverage AI for immediate comprehension and interactive inquiry rather than for direct linguistic correction, a point that potentially merits further investigation given common EMI language challenges.

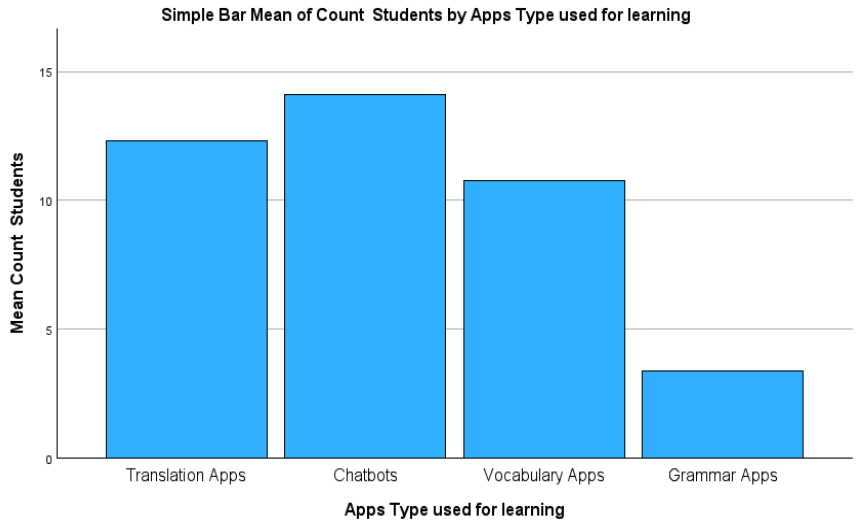


Figure 3.9 AI-Powered Tools Used by EMI Students

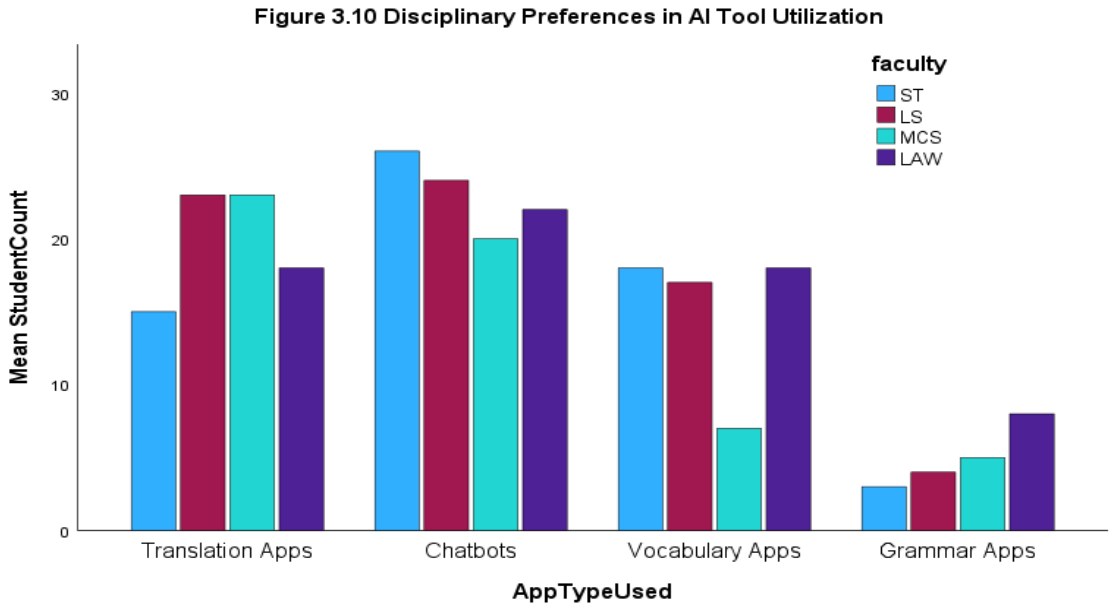


Figure 3.10 Disciplinary Preferences in AI Tool Utilization

with chatbots' usage highest among technical streams (ST: 26; LS: 24) and law (22), The high usage can likely be explained by the quick manner in which they are able to describe complex technical information and provide problem-solving solutions. Translation software is most prevalent in life sciences (LS: 23) and mathematics (MCS: 23), highlighting their

multilingual text understanding reliance, while vocabulary applications witness even usage in ST and law faculties (18 each) but nil uptake in mathematics (7), identifying discipline-based vocabulary priorities. Grammar aids are always low across disciplines (3–8 students), suggesting that students may value other forms of linguistic assistance more or maybe do not particularly care about grammatical quality when deciding on their AI tool. The findings reaffirm the reality that the use of AI tools is not homogeneous but rather diverse depending on the specific scholarly and linguistic requirements of a given discipline. These pedagogical variations highlight the need for tailored responses to AI integration that are sensitive to the distinctive pedagogical requirements of each faculty within the EMI higher education in Algeria.

Q5: How comfortable are you with the idea of using Al applications to help you with your English learning?

This section investigates EMI learners' comfort levels with AI applications to support their English learning, a critical factor related to the adoption of technology. Responses were scaled from ‘Very Uncomfortable’ to ‘Very Comfortable.’

Table 3.9 Students Comfort Level with AI Applications in EMI Learning (n=120)

Comfort Level	Frequency	Percentage
Very Uncomfortable	1	0.8%
Uncomfortable	11	9.2%
Neutral	7	5.8%
Comfortable	44	36.7%
Very Comfortable	57	47.5%
Total	120	100.0%

As displayed in Table 3.11 and Figure 3.11, the comfort level of EMI students concerning the use of AI applications for English learning is strikingly positive. A strong majority, 84.2% (n=101) of students were either 'Comfortable' (36.7%, n=44) or 'Very Comfortable' (47.5%, n=57) with AI integration into English learning. On the contrary, a very small share of

respondents reported discomfort with the integration of AI, with 0.8% (n=1) reporting 'Very Uncomfortable' and another 9.2% (n=11) 'Uncomfortable.' This indicates that there is a very strong positive attitude towards the use of AI technology in their learning suggesting that students are willing to leverage AI technologies as learning supports in their EMI modules.

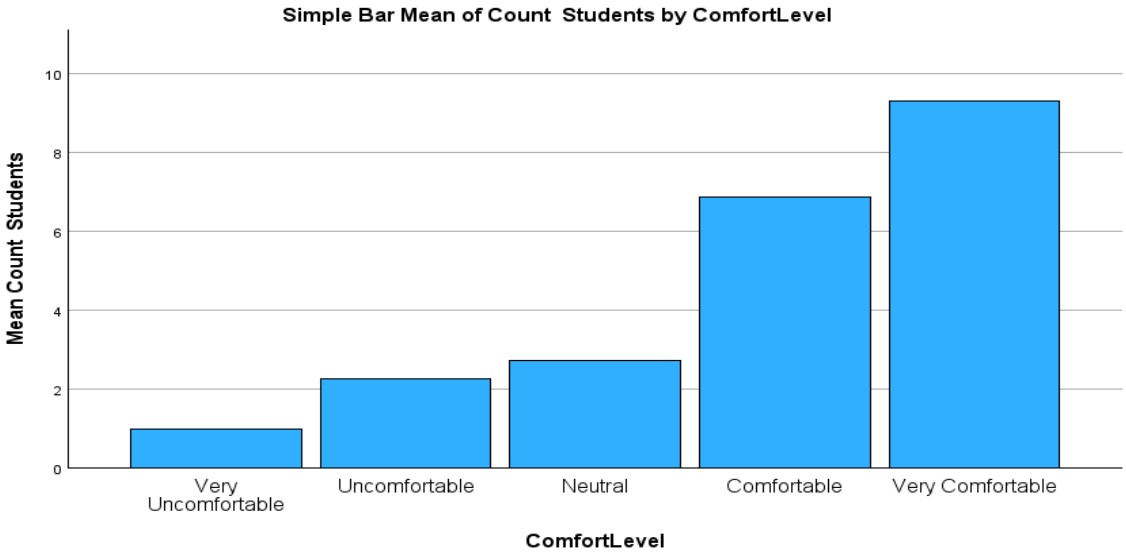


Figure 3.11 Students Comfort Level with AI Applications

To further dissect these comfort levels and understand potential disciplinary influences, Figure 3.12 presents the distribution of student comfort across various faculties.

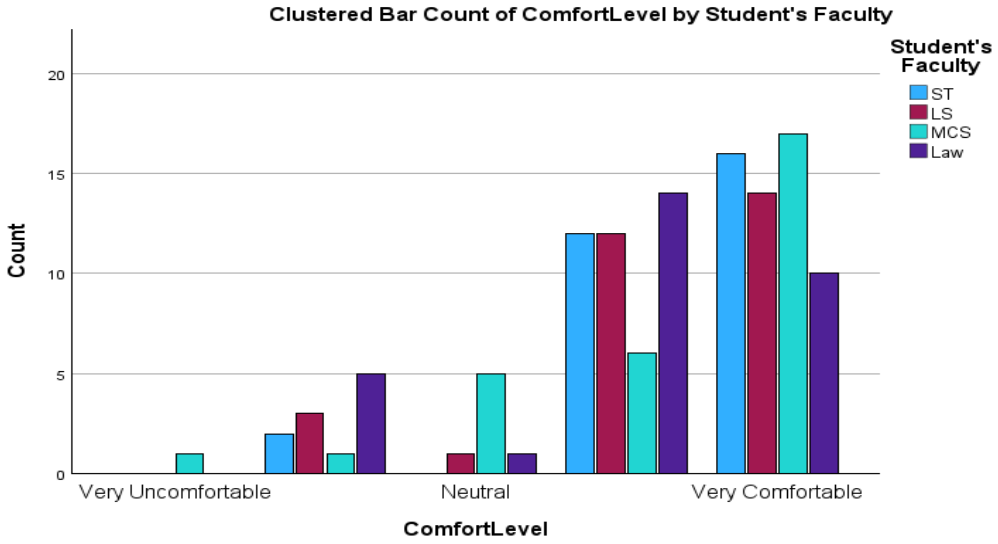


Figure 3.12 Disciplinary Variations in Student Comfort Level

provides crucial insights into how comfort with AI applications varies across different academic disciplines. revealing a striking disciplinary divide in AI acceptance. Students from Mathematics and Computer Science (MCS) showed discomfort (23%) and neutral (31%) responses that align with low tool adoption (N=27),likely due to awareness of AI's technical limitations .On the other hand, the Life Sciences (LS) and Science & Technology (ST) disciplines display a strong level of comfort (71-78%) in alignment with their higher usage of translation aids and chatbots. Law students demonstrate moderate comfort (65%) but express reservations about AI's role in legal analysis. The lack of "Very Uncomfortable" responses (less than 5%) reinforces the idea that AI has been integrated into academia, though the MCS anomaly highlights how disciplinary culture - beyond technical familiarity - shapes acceptance.

Q6 : Al Tools VS Traditional Ressources

The integration of Artificial Intelligence (AI) tools into English as a Medium of Instruction (EMI) learning environment presents a dynamic shift from conventional educational resources. An open-ended question enabled learners from all disciplines to share their views and rationals regarding the use of AI tools and their comparison to traditional aids in English as a Medium of Instruction (EMI) classes. The major observation from most faculties revealed a remarke inclination towards AI tools, which is primarily supported by two important reasons: AI's Accessibility and Interactive Learning Features and Its Ease of Use and Speed.

Accessibility and Active Engagement

Students value AI tools for their widespread availability and their capacity to foster a more engaging and personalized learning experience. Students highlighted AI's 'always-on' nature and its ability to facilitate a dialogue, which improves interest and engagement.

-Science & Technology (ST) Faculty:"AI tools are more helpful and useful because they are not restricted to a particular time or place while the traditional ones are." – ST24

-Mathematics and Computer Science (MCS) Faculty: "The interactive way AI explains things makes learning easier and fun ." – MCS8

-Law & Political Science (LPS) Faculty: "AI is easier to access and not boring while transitional ones are boring." – LPS8

Ease of Use & Speed

AI tools' encompasses the pervasive appreciation capacity to significantly reduce the time and effort required for academic tasks. Students consistently praised AI for its rapid response times, its ability to quickly generate solutions, and its overall user-friendliness, which made everything more efficient and learning easier for the students.

-Science and Technology (ST) Faculty: "In all ways, we depend on AI more because it saves time and gives quick answers" – ST2

-Life and Natural Sciences (LS) Faculty: "AI is better because it saved me a lot of time searching for information" – LS1

-Mathematics and Computer Science (MCS) Faculty: "AI is more helpful because it saves energy and time and by giving instant answers to any question" – MCS24

-Law & Political Science (LPS) Faculty: "AI is better than the traditional ways, it helps in learning in a short period, fast, time-saving and easier" – LPS5

There was significant variation between faculties in AI preference: Science & Technology (ST) students greatly preferred AI (96.7%) for speed, Law (LPS) and Life Sciences (LS) students leaned toward AI(80% each) for immediate feedback and accessibility, though 20% in both these groups valued the traditional methods. In notable contrast to these faculties' predominant trend of embracing AI tools was the Mathematics and Computer Science (MCS) faculty, which showed a slight preference towards the traditional resources. Regardless of the discipline's technological sophistication, where professional and scholarly work often relies on computational tools, Within the MCS cohort, 16 out of 30 students (53.3%) favored traditional resources over AI. The supporters of AI numbered 12 (40%) , while the rest (2) held intermediate positions.

Section C: Students' experiences and perceptions on AI Applications

Perceptions and Benefits of AI in EMI

The second open-ended question aimed at investigating the direct experiences of students and the perceived benefits they gained from integrating Artificial Intelligence (AI) tools in their learning English as a Medium of Instruction (EMI). These responses were obtained from students majoring in courses offered in four faculties, namely Science & Technology (ST), Life and Natural Sciences(LS), Mathematics and Computer Science (MCS), and Law & Political Science (LPS). Several common views or perceptions consistently surfaced amongst all these faculties, pointing to the overall positive impact of AI on various

aspects of academic life. In contrast to this is what was highlighted earlier in "AI Tools vs. Traditional Resources" whereby MCS learners leaned more towards traditional ways. However, when it comes to how these technologies are applied, the majority across departments reflected a common positive experience.

Vocabulary Building and Language Improvement

The contribution of AI in expanding students' vocabulary, with an overall improvement in English language proficiency, was a common benefit acknowledged by all the faculties. There are numerous references to AI tools such as those that provide new words, understand complex words, and assist general language gain. This indicates that AI acts as a readily available linguistic tutor offering immediate access to definitions, synonyms and contextual usage. It is important to mention that this kind of accessibility is especially important in EMI settings where students are exposed to new academic and discipline-specific terminologies daily. a challenge that was explicitly noted in previous sections regarding the challenges related to EMI.

-Science & Technology (ST) Faculty: "gained more Knowledge and learned english more" – ST29

-Life and Natural Sciences (LS) Faculty: "I learned new words that are helpful " – LS3

-Mathematics and Computer Science (MCS) Faculty: "AI gives me a wide range of words to understand. Good for me to develop." – MCS4

-Law & Political Science (LPS) Faculty: "I learned new vocabulary and terms that I did not know before" – LPS13

Personalized Explanations and Enhanced Comprehension

Students frequently cited AI's ability to clarify complex information, provide tailored explanations, and simplify difficult concepts in a manner that aids their understanding of lecture content, assignments, and academic texts. This includes AI's capacity to adapt its explanations based on student input, making learning more individualized. Hence it can be seen how it acts as a personalized pedagogical assistant. In adapting intricate subject matter into a more accessible pathway for comprehension, especially among students grappling with the dual challenge of mastering content and navigating a foreign language, AI rephrases, expands or breaks down such challenging subjects on an adaptive basis.

-Science & Technology (ST) Faculty: "AI tools are very helpful , they help in solving things with detailed explanations in any lecture or exercise." – ST15

-Life and Natural Sciences (LS) Faculty: "AI explanations helped me to understand hard concepts better" – LS2

-Mathematics and Computer Science (MCS) Faculty:"Whenever I ask AI 'what does something or anything, it explains everything easily. Which helps me a lot to learn." – MCS3

-Law & Political Science (LPS) Faculty:"good experience in simplifying the academic terms to a easier ones" – LPS29

Confidence Building and Motivation

Several students stated that AI tools boosted their confidence in using English especially while speaking or writing English as well as made their learning much more enjoyable rather than daunting. AI's non-judgmental and immediate feedback mechanism appears to create a safe space for language practice, reducing anxiety associated with making errors. This fosters a more positive attitude towards EMI learning, converting what could be one tough experience into something that would motivate learners more instead.

-Science & Technology (ST) Faculty: "one of the most notable benefit is giving me the ability to improve in any field and gaining confidence in using and speaking English" – ST13

-Life and Natural Sciences (LS) Faculty: "AI helped me a lot in improving my English i became more confident in using the language these days " – LS19

-Mathematics and Computer Science (MCS) Faculty: "AI motivates me to learn more because of its helpful responses." – MCS21

Law & Political Science Faculty: "it helped me in gaining new vocabulary and in words pronunciation also it made me more confident when it comes to speaking in English" – LPS4

Concerns about AI in EMI

The final open-ended question aimed to elicit students' perceived challenges and concerns stemming from the integration of Artificial Intelligence (AI) tools into their English as a Medium of Instruction (EMI) learning environments. There were several challenges and concerns that came about in all four faculties. The nature of these concerns was similar across disciplines, but sometimes certain issues were emphasized more or occurred more frequently because they were subject-specific in nature.

Accuracy and Credibility

A paramount concern articulated by students across all faculties revolved around the reliability and veracity of information provided by AI tools. This had a direct impact on their reliability as an academic resource. It is a way of showing extreme caution when students are concerned with the outputs of AI. In an educational setting, when accuracy, precision and traceability are essential, this could be detrimental to AI's value considering its perceived fallibility. This worry is especially important in disciplines where factual inaccuracy or non-verification of sources is unacceptable. Especially for the MCS Faculty.

-Science & Technology (ST) Faculty :"AI can makes mistake sometimes and don't give credible resources" – ST29

-Life and Natural Sciences (LS) Faculty:"AI often makes mistakes…embarrassing situation" – LS14

-Mathematics and Computer Science (MCS) Faculty:"AI provides unreliable answers and makes mistakes in correction." – MCS10

-Law & Political Science (LPS) Faculty:"AI Sometimes gives wrong answers" – LPS26

Over-reliance and Cognitive Skill Erosion

Another concern expressed by students related to their overdependence on artificial intelligence resulting in loss of cognitive skills. They were afraid that too much reliance on AI could hinder their ability to think independently, engage in critical analysis, and develop necessary learning skills. This concern points towards a metacognitive awareness among students regarding the potential downsides of AI convenience. Students believe that while AI can provide instant answers, it may bypass some of the underlying processes (such as reading, solving problems, and retaining) that are important for true academic growth.

-Science & Technology (ST) Faculty:"overuse makes me lazy to study" – ST12

-Life and Natural Sciences (LS) Faculty:"Overuse of AI makes us count on it in everything" – LS11

-Mathematics and Computer Science (MCS) Faculty:"I forget how to think alone because I use AI for everything" – MCS2

-Law and Political Science (LP) Faculty :"I feel that I rely too much on AI." – LP29

Teacher perspectives regarding AI impact on students, strongly align with students' concerns regarding over-reliance and its potential negative impact on cognitive development. Teacher 2

(male, ST Faculty) says that AI "May lead to superficial learning if not guided properly." Teacher 3 (female, ST Faculty), like many others, said, "Most of the students, however, became reliant on it and are progressively losing engagement." This is further supported by Teacher 4 (male, LS Faculty) who cautioned that "over-reliance risks diminishing critical thinking and problem-solving skills" suggesting AI as an adjunct instead of a replacement for education. Likewise, Teacher 6 (male, MCS Faculty) warned against this practice explaining that "Relying too much on Al for answers in mathematics is completely a bad habit for the students, they might not be deeply engaged with critical thinking," echoed by his counterpart teacher 7(female MCS faculty) in her statement: "A disastrous influence; they've stopped reasoning."

Technical Barriers and Accessibility Issues

Practical challenges related to internet connectivity and access to AI platforms or specific applications were found to be one of the biggest challenges that hindered the successful integration of seamless AI into school systems. This underscores the infrastructural and practical prerequisites for effective AI utilization. Although AI tools can be useful in theory, they are often hindered by internet instability and device compatibility, especially in areas where digital resources may not always be reliable.

-Science & Technology (ST) Faculty:"poor internet connection" – ST15

-Mathematics and Computer Science (MCS) Faculty: "AI needs the Internet all the time. My Wi-Fi is not strong." – MCS19

-Law & Political Science (LPS) Faculty:"Weak Wi-Fi" – LPS30

From this perspective, AI provides significant advantages for EMI learning; however, students are aware of its limitations. Issues regarding the accuracy of information produced by AI systems, the risks associated with over-dependence on AI outputs, technical constraints,represent key areas that need to be addressed to foster more effective and trusted integration of AI into educational practices

3.2.2. Analysis of the Teacher's Interview

This section presents a small-scale qualitative inquiry into how university instructors in Algeria have begun to use English as a Medium of Instruction (EMI) while also bringing Artificial Intelligence (AI) software into their classrooms. Seven lecturers from disparate faculties participated in semi-structured interviews designed to reveal the pressures, habits, and new responsibilities they encounter when switching from French to English and layering AI onto existing pedagogies. The data show that juggling linguistic insecurity, uneven access

to technology, and altered faculty-student dynamics requires considerable improvisation, yet the teachers express a reluctant optimism about the innovations.

Table 3.10Teacher's Demographic Profile

Fields	**number of teachers**	**Prior language used**	**years of experience in teaching**
Science & Technology Faculty	3	French (3)	10 - 20
Nature & Life Science Faculty	2	French (1) English (1)	1 - 12
Math & Computer science faculty	2	French (1) English (1)	2 - 9

3.4 Challenges in EMI Delivery and Proficiency

3.4.1 DISCUSSION

The current research explores how instructors and learners at Mohamed El Bachir El Ibrahimi University perceive Artificial Intelligence within English-medium instruction courses. The findings reveal a complex landscape where AI tools are simultaneously embraced for their potential to enhance learning and approached with caution due to pedagogical, ethical, and disciplinary-specific concerns. Unexpectedly, the data also show that uptake patterns differ from one field to another, a discovery that complicates the usual picture of uniformity in higher-education tech adoption and therefore adds a new local dimension to ongoing global debates about AI in the university context.

Language barriers truncated English language skills and challenges of navigating the more formal academic registers-directly influence the classroom experience for teachers and students. Similar observations are recorded by Alhassan (2021) and Hellekjær (2010). Cultural dissonance, stemming from the variety of backgrounds students come from and the expectations they hold, echoes challenges noted by Tange (2010) and Chouari (2016).

In order to manage these prevalent linguistic and cultural problems in EMI settings, an overwhelming majority of the students (94.2%) reported they actively used AI tools, namely

chatbots (76.7%) and machine translation software (65.8%), to manage these problems. Such prevalent use resonates with trends noted by Zhang and Zou (2020) in Asian universities, where students leveraged AI to overcome language barriers. Students emphasized AI's role in making complex disciplinary content more accessible, with one MCS student noting that "AI breaks down math concepts in simpler English." However, a striking disciplinary divide emerged: while Law students embraced AI for language support, they rejected its application in legal analysis ("ChatGPT can't argue like a lawyer—it misses the nuance"). Conversely, 53% of Mathematics and Computer Science (MCS) students preferred traditional methods for core conceptual work, with Teacher 6 (MCS) commenting, "My students don't trust AI for mathematical reasoning—they want to see the process, not just answers." This reverses the expectation that STEM subjects would be more receptive to AI and lends support to Macaro's (2020) argument that disciplinary epistemologies play a strong role in technology adoption.

AI's advantages include building confidence and personalized learning in addition to language support. Students in all disciplines reported improvements in vocabulary retention and speaking fluency, and one Law student attributed an increase in class participation to "AI pronunciation practice." These findings support Golonka et al.'s (2014) research on the motivational benefits of AI and Hu and Lei's (2014) work on the cognitive benefits of scaffolded EMI. STEM educators also referred to the uses of AI in preparatory practices, for instance, multilingual resource creation—a practice reported by Macaro (2020) in European EMI contexts. One physics teacher explained how filling technical vocabulary gaps was facilitated by translation tools, and here lies the contribution of AI towards reducing language barriers across technical disciplines. Despite all these benefits, serious issues did arise.

Students claimed incidents of AI-caused mistakes in technical fields (i.e., law and computer science), as Alqarni et al. (2024) noted about medical education trust. Excessive reliance was also an important factor, with 62% of students admitting excessive reliance on AI—a behavior instructors warned could undermine academic honesty and critical thinking skills, as Warschauer and Grimes' (2008) warning work reminded. The results of not being able to perform an analysis because of restrictions on infrastructure, particularly irregular access to the Internet, further impeded a regular reliance on the AI, confirming Lamraoui's (2021) findings on the gaps in digital readiness in Algeria. There was a consensus among the educators that the way AI could replace face-to-face teaching in the classroom did not account for the co-interaction in classroom teaching when looking at misunderstandings about a conceptual path.

This issue supported Selwyn's (2019) argument that human teachers are essential in developing critical thinkers.

The disciplinary variations also served to raise the issue of specialist training programs, as mooted by Bannister et al. (2023), to deal with skepticism and use field by field. Ethics-related concerns, primarily accuracy and academic integrity served to highlight the need for institutional regulations such as UNESCO's (2021) human-focused AI model. Indeed, infrastructure limitations necessitate particular investment to ensure equitable access to technology infrastructure, a concern that Ouarniki (2023) regarded as the most critical to successful EMI implementation in Algeria.

3.5. Limitations

Our findings should be interpreted in light of certain limitations that should be acknowledged. First, the study did not consider the correlations of AI adoption in EMI classes with major demographic variables like age, sex, prior English proficiency, socio-economic status, or rural/urban geographical factors. Omissions limit our insights about how identities might intersect to inform exposure to AI tools, especially in the tiered Algerian school system.

Second, the small sample base—a single Algerian university—places an upper bound on external validity of results. While contrasts between areas of interest (e.g., Law vs. STEM attitudes) are worth making, it is uncertain that they will be replicable in other universities with differing resources or teaching environments. Prudence is therefore in order in generalizing these results to more extensive populations.

A significant potential limitation of this study is that its potential value was constrained, in part, by a methodological change that resulted from unexpected institutional barriers. This study began with the intent of including participants from the Faculty of Humanities and Social Sciences to provide a diverse representation of disciplines. At the time of data collection, it was confirmed by a faculty member (the Associate Dean) that EMI had not yet been formally adopted as a pedagogical practice for this faculty, unlike the other faculties included in the survey (i.e., Science and Technology, Life and Natural Sciences, Mathematics and Computer Science, and Law and Political Science). This unexpected limitation affected our sample's potential disciplinary diversity, which would have influenced the range of perspectives on the integration of AI in EMI contexts. Although this limitation does not reduce the strength of the findings of the participant faculties, it did generate a blind spot regarding how the possible disciplines of humanities and social sciences would have interacted with AI in EMI contexts, a potentially significant area for future study.

Methodologically, excessive reliance on open-ended questionnaires and interviews, although representative of participants' perceptions, is prone to biases. Self-reports are likely to overestimate the performance of AI tools or underreport usage because of social desirability bias. Furthermore, qualitative dominance of this research cannot ascertain statistical trends or cause-effect relationships between learning performance and AI usage.

Time constraints also constrained the depth of study. The brief data collection period did not permit exploration of cultural-institutional hurdles (e.g., department AI policy) or restricting teacher interviews at the expense of the potential for triangulation. Similarly, administrative constraints such as sporadic access to the internet—though recorded—were not systematically measured with varying impact across student subgroups. In doing so, we place the study's contributions into context and establish the caveat of reading its results.

3.6. Recommendations

The findings of the study highlight both the potential for improvement and the context-specific issues in applying AI in EMI classrooms throughout Algerian higher education. Future research should include humanities faculties once they implement EMI, as their disciplinary approaches to AI tools may differ significantly from STEM and law fields. They must have a high priority on interdisciplinary, longitudinal investigations into the influence of AI on learning outcomes throughout STEM and humanities faculties at multiple semesters. These studies would help disentangle discipline-specific efficacy patterns—such as MCS students' cynicism and Law students' enthusiasm towards language support—while accounting for variables like age, gendre, initial English proficiency, AI literacy, and institutional resource disparity. To complement this, experimental research comparing AI-enriched EMI models (e.g., chatbot-mediated flipped classrooms against traditional lectures) could offer evidence-based solutions to curriculum developers, precisely in the area of circumventing infrastructural barriers like patchy internet connectivity that most adversely affect rural and low-income students. Observing the extraordinary disciplinary variation in AI adoption and utilization, where, for instance, Law students rejected AI for legal reasoning while Mathematics and Computer Science (MCS) students turned to traditional approaches for primary conceptual work, it is necessary to move beyond the one-size-fits-all approach.

Universities therefore need to create discipline-specific AI incorporation policies that prescribe appropriate AI instruments and use protocols suited to the epistemological demands of each school. For instance, even though AI can be marketed for language support in Law, its usage in critical legal analysis may be restricted, while in Mathematics and Computer Science, there

ought to be emphasis on AI for concept understanding and problem-solving mechanism, not only answer provision.

Thus, universities should invest in systematic and frequent EMI teacher professional development schemes.

These programs need to comprehensively incorporate advanced English for Specific Purposes (ESP) instruction to enhance teachers' confidence and capabilities in delivering discipline-focused content in English, as well as AI literacy and pedagogical incorporation workshops. Such workshops would educate teachers to critically evaluate AI instruments, understand their authentic pedagogical applications (e.g., AI as an adjunct to vocabulary and tailored explanations), and create activities promoting responsible AI use. Above all, training should include strategies for managing student dependence, teaching the student to recognize dependence, designing assignments with demands of higher-order thinking than that possible with AI, and fostering a culture in which AI is used as a study resource, not a substitute for brain work.

General Conclusion

General Conclusion

Artificial Intelligence (AI) applications to English as a Medium of Instruction (EMI) have emerged as a transformative force in Algerian universities, especially since the recent switch from French to English. The current study elaborated on perceptions of students and teachers of Mohamed El Bachir El Ibrahimi University about the use of AI tools in EMI classrooms. Specifically, it focused on the perceived benefits and concerns of using this new technology. AI tools are shown to be highly effective in improving language skill levels, understanding of content, and personalizing learning, all of which help mitigate some of the systematic issues when using EMI in the Algerian context.

The three-chapter structure of the study provided a comprehensive framework for building the AI-EMI connection. Beginning with an extensive literature review, the study established the global backdrop of EMI practice and AI pedagogic theoretical foundations, extending this to Algeria's specific linguistic and educational contexts.

The methodological approach combined qualitative interviews with faculty members and quantitative surveys of students, capturing diverse perspectives from multiple academic disciplines. This two-part strategy was particularly helpful in revealing the gap between teacher belief and student practice,as many instructors underestimated both the frequency and sophistication of their students' AI usage. The findings highlight disciplinary variation in AI adoption, whereby students in each faculty utilized the tools differently, which are indicative of a fundamental differences in pedagogical needs and learning objectives

The findings indicated a universal use of AI tools among the students, as 94.2% of them utilized them to address EMI-caused issues. The most popular tools were AI chatbots, machine translation software, and vocabulary apps, serving as lingual lifelines for students who were struggling with technical jargon and complex ideas.

The teachers, while supportive of AI, were worried about over-reliance, accuracy, and diminishing analytical ability. Disciplinary differences were also noticed where STEM students employed AI to answer questions and give technical explanations, while law students employed AI to develop vocabulary and for simple concept explanations of legal jargon. The study reaffirmed that interventions based on AI have tangible benefits, including heightened participation, focused learning, and real-time feedback. It also raised concerns regarding over-reliance on technology, ethics, and the need for robust institutional support and capacity-building. Tutors insisted that there had to be a balance in AI integration with traditional teaching methods to ensure academic integrity and foster independent thought. Despite its

strengths, this study is not free from limitations. The population, though diverse, comprised only a single university, which limited the ability to generalize findings to other Algerian universities. Limited by time and access limitations to literature also defined the scope of the research. Future studies can attempt to expand the sample size, incorporate longitudinal data, and partner with inter-disciplinary collaborators to extend AI-EMI models. Finally, AI has vast possibilities for enhancing EMI in Algerian universities but its effective integration requires careful planning.

In conclusion, AI holds immense promise for enhancing EMI in Algerian universities, but its successful integration requires a nuanced approach. Policymakers, practitioners, and institutions have to collaborate to develop personalized plans to suit the needs of disciplines, determine ethical usage, and provide continuous teacher training. AI does not have to replace human teachers but can be employed as an adjunct instrument to supplement the learning process. As AI technology continues to develop, ongoing research and adaptive implementation will be required in order to maximize optimal benefits and prevent losses, creating progressively wide-based and strong EMI environments in Algeria and beyond.

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Appendix

Appendix A : English as a medium of instruction adoption

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي والبحث العلمي

الأمين العام

رقم: 673/ا.ع/2023 الجزائر في: 01 جويلية 2023

السادة رؤساء الندوات الجهوية للجامعات
بالاتصال مع مديري مؤسسات التعليم العالي

الموضوع: بخصوص اعتماد اللغة الإنجليزية كلغة للتدريس بدء من الموسم الجامعي المقبل 2023-2024.

تنفيذا لتعليمات السيد الوزير، وفي إطار التحضير لاعتماد اللغة الإنجليزية كلغة للتدريس بدء من السنة الجامعية المقبلة 2023-2024، يشرّفني أن أطلب منكم تنظيم اجتماعات بهذا الخصوص، وتشكيل فرق بيداغوجية حسب المقياس أو المادة، وذلك قبل الخروج للعطلة الصيفية.

وتجدر الإشارة إلى أن الفريق البيداغوجي، الذي يترأسه أستاذ عن طريق التعيين أو الانتخاب، يتكوّن من مجموعة من الأساتذة المحاضرين، وكذا الأساتذة الذين يضمنون الأعمال التطبيقية والأعمال الموجهة.

وعليه، يجب أن يتضمن جدول أعمال هذا الاجتماع النقاط التالية:

- عرض مرحلي للتحضيرات الخاصة باعتماد اللغة الإنجليزية كلغة للتدريس،
- إعداد استعمالات الزمن.

كما أنهي إلى علمكم بأن اللجنة الوطنية للإشراف ومتابعة تنفيذ برنامج تكوين الأساتذة وطلبة الدكتوراه في اللغة الإنجليزية، والتي تترأسها الأستاذة قاصد آسيا، تعتزم القيام بزيارات ميدانية للمؤسسات الجامعية، خلال شهر جويلية الحالي، لتقييم التحضيرات ذات الصلة. لذا، يطلب من مديري المؤسسات الجامعية اتخاذ جميع التدابير والإجراءات الملائمة لاستقبال أعضاء هذه اللجنة، وتسهيل مهمتهم، وافادتهم بالمعلومات المطلوبة.

تحياتي الخالصة.

Digitally signed by Abdelhakim BENTELLIS
Date: 2023.07.01 13:57:16 +01'00'

Appendix B

Students Questionnaire

This questionnaire aims to gather insights and perceptions from students regarding their experiences with Artificial Intelligence (AI) integration in English as a Medium of Instruction (EMI) learning environments. The purpose is to better understand the perceived benefits and challenges of this integration and to identify areas for improvement. EMI involves teaching academic subjects through English, while AI tools are increasingly used to support language learning and content comprehension within these settings. Participation in this study is entirely voluntary, and all information collected will be treated with the utmost confidentiality. By completing this questionnaire, students indicate their voluntary agreement to contribute to improving the quality and effectiveness of AI integration in EMI learning.

If you have any questions or concerns about this study, please contact us at::eekmrryeee@gmail.com

PART A: Background Information

1. Age:

   ……

2. Gender:

   ……

3. Faculty / Department / Specialization:……

   ……..

4. Year of Study:

   ……

5. Have you taken courses where English was the primary language of instruction (EMI)?

☐ YES ☐ NO

If "YES," for how many semesters/years?…….

PART B: AI support for comprehending English materials

❖▪Please answer each of the following in full sentences

1. What are the main challenges you face in your EMI learning?

……

……

……

……

……

2. Have you used any AI tools to help you overcome these challenges? For your EMI courses or in other contexts?

a. YES ☐ / b. NO ☐

If (NO) explain

why:……

……

…….

3. How often do you use AI tools to deal with EMI content?

……

……

……

4. If (YES), please indicate which of the following AI-powered tools you have used to support you in your learning (you may select more than one)

☐ Machine translation tools

☐ AI chatbots

☐ AI-powered vocabulary learning apps

☐AI-powered grammar and spell checkers

☐ Other (please specify)

……

……..

5. How comfortable are you with the idea of using AI applications to help you with your English learning?

……

……

……

6. In what ways do you find AI tools more or less helpful than traditional resources?

……

……

……

PART C : Students' experiences & perceptions on AI Applications

1. Describe your personal experience with using AI tools in your EMI learning journey.

……

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……

……

……

2. What are the benefits you have gained?

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……

……

3. Which challenges have you come across?

……

……

……

4. Feel free to include any additional comments

……

……

……

……

……

Thank you for your valuable contribution!

Appendix C

Interview Consent Form

Exploring Teachers' and Students' Perceptions on Artificial Intelligence Integration in EMI Classrooms in Higher Education

This interview aims to gather insights and perceptions from teachers and students of BBA University, regarding the potential benefits and concerns associated with the integration of Artificial Intelligence (AI) within their English as a Medium of Instruction (EMI) classrooms. Specifically, this interview will explore their current experiences with AI tools in EMI classrooms, their perceptions regarding AI integration in these contexts, and the perceived benefits and concerns associated with AI adoption in EMI teaching and learning processes. The findings of this study will be used to identify areas where effective and ethical AI integration strategies can be developed to enhance teaching and learning in EMI. Artificial Intelligence (AI) is increasingly being explored for its potential to transform educational practices, including language learning and teaching. Given the increasing importance of AI in education and the unique context of EMI classrooms, understanding the perceptions of teachers and students is crucial for the effective and ethical integration of AI in EMI classrooms. In this context, Artificial Intelligence (AI) refers to computer systems designed to perform tasks that typically require human intelligence, such as learning and problem-solving (Russell & Norvig, 2021). English as a Medium of Instruction (EMI) is the use of the English language to teach academic subjects other than English (Macaro, 2018).

This research can contribute to informed decision-making regarding AI implementation in higher education. Participation in this study is voluntary, and you have the right to withdraw your participation at any time without penalty. If you agree to participate, you will be asked to take part in an interview that will consist of questions about your experiences and

perceptions of Artificial Intelligence (AI) integration in your English as a Medium of Instruction (EMI) classrooms. All information collected in this study will be kept confidential. Your responses will be anonymous, and your personal information will not be disclosed to anyone. By signing this consent form, you are indicating that you have read and understood the information provided above and that you voluntarily agree to participate in this study. Thank you for considering participating in this study. Your opinions and suggestions are greatly appreciated

Statement	Yes	No
-I have read and understood the information provided to me in the Information sheet		
-I have had the opportunity to ask questions about this research		
-I agree to the interview being recorded		
-I understand i can decline to answer any question		
-I understand that i can withdraw my answers in part or full, anytime up until 6 months after data collection		
-I agree to anonymized quotations being used in my academic presentations or publications of this work		
-I agree to my data being used in any subsequent work that builds on this current project		

Signature and date of person giving consent (the participant)

……

Signature and date of person obtaining consent (the researcher)

……

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Appendix D

Teacher Interview Questions

Exploring Artificial Intelligence (AI) use in English as a Medium of Instruction (EMI) contexts

1. What module(s) do you teach?,
2. How many years have you been teaching in higher education?
3. Before teaching in English, what language did you use to teach this subject?
4. Which challenges did you face in effectively delivering your module content through EMI?
5. Which challenges have you experienced with your own English proficiency?
6. Which challenges have you experienced with EMI content preparation?
7. Which challenges have you experienced with your students' English proficiency?
8. Which challenges have you experienced with your students' understanding of EMI Lessons?
9. Have you incorporated any Artificial Intelligence (AI) tools into your lesson preparations and teaching practices?
10. If 'YES', Which AI tools do you use? For which purposes?
11. If 'NO', explain your reasons
12. How do you evaluate your own experience with AI tools in EMI contexts, regarding language and content?
13. What are your primary concerns regarding the use of AI to prepare EMI lessons and materials?
14. Do you think your students currently use AI tools to learn EMI modules?

15. In which kind of activities do your students use AI tools?

16. How might AI integration influence your students' engagement with EMI learning?

17. How might AI affect student-teacher interaction and classroom communication in EMI?

18. With increasing AI and English Mediums in education, how might your role as a Teacher become?

19. What training or resources would help you integrate AI in EMI contexts effectively?

Abstract

Résumé

Le paysage actuel de l'enseignement supérieur en Algérie est profondément influencé par la récente transition nationale vers l'anglais comme langue d'enseignement (EMI) et l'émergence simultanée des technologies de l'intelligence artificielle (IA). Cet environnement d'apprentissage en constante évolution exige une compréhension complète des perceptions des parties prenantes concernant l'application de l'IA pour relever les défis de l'EMI. Cette étude explore les perceptions des enseignants et des étudiants de première année de l'Université Mohamed El Bachir El Ibrahimi concernant l'utilisation de l'IA dans les salles de classe EMI, en se concentrant sur ses avantages et ses préoccupations associées. Adoptant une approche de recherche qualitative, les données ont été méticuleusement collectées au moyen de questionnaires remplis par un échantillon de 120 étudiants de quatre facultés diverses (Sciences et Technologie, Sciences de la Vie et de la Nature, Mathématiques et Informatique, et Droit et Sciences Politiques), ainsi que d'entretiens semi-structurés avec 7 enseignants d'EMI. Les résultats indiquent une forte utilisation des outils d'IA par les étudiants, 94,2 % d'entre eux déclarant les utiliser, principalement pour l'amélioration du vocabulaire, une meilleure compréhension grâce à des explications personnalisées, le gain de confiance et l'économie de temps. L'étude révèle cependant également des préoccupations majeures, notamment la validité et la cohérence du contenu généré par l'IA, la dépendance excessive à l'égard de l'IA et l'érosion des capacités cognitives qui en résulte – une préoccupation qui trouve un soutien considérable du point de vue des enseignants – et des problèmes techniques pratiques comme la disponibilité d'internet. Une divergence disciplinaire notable est apparue, les étudiants en Mathématiques et Informatique exprimant une préférence plus raffinée pour les ressources traditionnelles dans le travail conceptuel de base, remettant en question les hypothèses traditionnelles sur l'utilisation de la technologie dans les domaines STEM. Cette recherche apporte des éclairages précieux sur le succès pragmatique et l'éthique du déploiement de l'IA dans le contexte EMI émergent en Algérie, et sur la nécessité de systèmes institutionnels sur mesure pour libérer le potentiel révolutionnaire de l'IA sans ses risques inhérents.

Mots-clés : EMI, intégration de l'IA, perceptions des étudiants, perceptions des enseignants, avantages, préoccupations, enseignement supérieur.

ملخص:

يتشكل المشهد الحالي للتعليم العالي في الجزائر بشكل عميق بفعل التحول الوطني الأخير نحو استخدام اللغة الإنجليزية كوسيط للتدريس (EMI) والظهور المتزامن لتقنيات الذكاء الاصطناعي .(AI) تتطلب بيئة التعلم المتطورة هذه فهمًا شاملاً لتصورات أصحاب المصلحة فيما يتعلق بتطبيق الذكاء الاصطناعي لمواجهة تحديات الـ .EMI تستكشف هذه الدراسة تصورات كل من الأساتذة وطلاب السنة الأولى بجامعة محمد البشير الإبراهيمي حول استخدام الذكاء الاصطناعي في فصول الـEMI ، مع التركيز على الفوائد والمخاوف المرتبطة به. باستخدام منهجية البحث النوعي، تم جمع البيانات بدقة من خلال استبيانات أكملها عينة من 120 طالبًا من أربع كليات متنوعة (العلوم والتكنولوجيا، علوم الحياة والطبيعة، الرياضيات وعلوم الكمبيوتر، والقانون والعلوم السياسية)، بالإضافة إلى مقابلات شبه منظمة مع 7 من أساتذة الـ .EMI تكشف النتائج عن استخدام كبير لأدوات الذكاء الاصطناعي من قبل الطلاب، حيث أبلغ 94.2% منهم عن استخدامها، وذلك بشكل أساسي لتحسين المفردات، وتعزيز الفهم من خلال الشروحات المخصصة، واكتساب الثقة، وتوفير الوقت. ومع ذلك، تكشف الدراسة أيضًا عن مخاوف بالغة، بما في ذلك صلاحية ومصداقية المحتوى الناتج عن الذكاء الاصطناعي، والاعتماد المفرط على الذكاء الاصطناعي وما ينتج عنه من تآكل للقدرات المعرفية – وهو قلق يجد دعمًا كبيرًا من وجهة نظر الأساتذة – ومخاوف تقنية عملية مثل توفر الإنترنت. وقد ظهر تباين ملحوظ بين التخصصات، حيث أبدى طلاب الرياضيات وعلوم الكمبيوتر تفضيلاً دقيقًا للمصادر التقليدية في العمل المفاهيمي الأساسي، مما يتحدى الافتراضات التقليدية حول استخدام التكنولوجيا في مجالات العلوم والتكنولوجيا والهندسة والرياضيات. يقدم هذا البحث رؤى قيمة حول النجاح العملي وأخلاقيات نشر الذكاء الاصطناعي ضمن الاقتصاد الناشئ للـ EMI في الجزائر، وضرورة وجود أنظمة مؤسسية مصممة خصيصًا لإطلاق العنان للإمكانات الثورية للذكاء الاصطناعي دون مخاطرة الكامنة.

الكلمات المفتاحية: اللغة الإنجليزية كوسيط تدريس(EMI) ، الذكاء الاصطناعي(AI) ، تصورات الطلاب، تصورات الأساتذة، الفوائد، المخاوف، التعليم العالي.