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Exploring The Impact of Artificial Intelligence on Student's Learning and Pedagogical Practices in the Algerian Higher Education

The Case of Master 2 Students at the University of Ain Temouchent

An Extended Essay Submitted in Partial Fulfillment of the Requirement for a Master's Degree in Didactics and Applied Languages

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Dedications

To my dear mother, whose unwavering love and endless sacrifices have been my source of strength and inspiration, thank you for always believing in me.

To my father, thank you for his constant guidance, wisdom, and encouragement as my rock and guiding light.

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Abstract

This research explores the impact of Artificial Intelligence on students' learning and pedagogical practices in Algerian higher education, specifically at Ain Temouchent University (Belhadj Bouchaib). As AI usage among students rises, concerns from teachers about over-reliance on these tools have surfaced, raising questions about their potential impact on critical thinking skills and independence, which are crucial for students' academic and career success. This study tries to determine how much AI applications can contribute to the learners' academic outcomes. The researcher set two research questions that deal with the extent to which AI applications can improve students' engagement and learning outcomes, and what are and the challenges and opportunities associated with implementing AI in Algerian higher education through conducting a case study based on Master 2 students of both specialties (Didactics and Applied Languages/ Literature) at the Department of Letters and English Language. The study suggests two hypotheses: Integrating AI applications in Algerian higher education significantly enhances student engagement and improves learning outcomes, and implementing AI in Algerian higher education in Ain Temouchent presents significant challenges and opportunities. A mixed method approach was adopted, including a questionnaire addressed to Master Two students, and a structured interview was performed with seven teachers. The findings indicate that while AI tools can enhance student learning experiences and outcomes and improve teaching methods, challenges such as lack of training and infrastructure gaps exist, with some teachers expressing resistance to AI technology in favor of traditional methods. **Keywords:** Artificial Intelligence (AI), Student's learning, Pedagogical practices, Algerian higher education, Ain Temouchent University, AI applications, Master 2 students

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List of Acronyms and Abbreviations

AI Artificial Intelligence

NHSAI The National Higher School of Artificial Intelligence

US.USA United State of America

ICT Information and Communication Technology

GENERAL INTRODUCTION

General introduction

Artificial Intelligence has emerged as a transformative force across various domains, including Healthcare, Finance, Education, Transportation, and numerous other sectors, transforming how we handle tasks, decide, and engage with technology. At its essence, AI involves machines simulating processes, including skills like learning, logical thinking, solving problems, and perception. In the case of Algeria, AI is progressing quickly with advancements and efforts to boost the country's AI capabilities. Algeria has embraced a strategy to advance AI research and innovation to enhance expertise through education, training, and research. Overall, Algeria is making progress in adopting Artificial Intelligence to fuel progress in innovation, economic advancement, and societal growth.

Higher education in Algeria is undergoing significant changes, reflecting students' evolving needs and aspirations and the demands of a competitive global economy. It has followed the LMD (License, Bachelor, Master, and Doctorate) framework since 2004/2005, with over 1.7 million students and 130+ institutions. In Algeria's journey through the realm of progress, incorporating AI into universities shows potential for improving achievements, streamlining resource management, and nurturing creativity. However, in the context of Algerian Higher Education, AI represents a significant innovation with profound implications for teaching, learning, administration, and research.

This study explores the dual impact of Artificial Intelligence (AI) on the educational system. On the one hand, this research seeks to understand how AI can impact student's learning experiences and outcomes negatively and positively. On the other hand, it aims to examine the

implications of AI on teachers and teaching methods, delving into the advantages and challenges that arise from incorporating AI technologies into the educational environment.

At Ain Temouchent University, the integration of artificial intelligence has been indirect. It is because the use of AI tools has become widespread among university students, which has led to educators developing a negative perception of student's over-reliance on these tools. There is a concern that this dependence on technology may diminish student's innate cognitive and intellectual abilities, which could lead to a complete reliance on such technologies. It could have long-term implications on their overall academic success and career prospects, as well as on developing essential skills such as critical thinking and problem-solving.

This study delves into the implications of adopting artificial intelligence (AI) adoption in Algerian Higher Education. With students increasingly relying on AI tools, educators are growing concerned about the potential drawbacks. The shift towards AI-driven learning environments raises questions about the preservation of student's critical thinking skills, intellectual independence, and the risks associated with overdependence on technological aids. As AI becomes more ingrained in academic settings, understanding and addressing these concerns becomes paramount to ensure a balanced and practical approach to education. Therefore, the present study attempts to tackle the following two questions:

_To what extent can AI applications improve student engagement and learning outcomes in Algerian higher education?

_What are the challenges and opportunities associated with implementing AI in Algerian higher education in Ain Temouchent?

In light of the research questions, the following hypotheses are proposed:

 Integrating AI applications in Algerian higher education significantly enhances student engagement and improves learning outcomes.

 Implementing AI in Algerian higher education in Ain Temouchent presents significant challenges and opportunities, contributing to enhancing educational quality and meeting global standards.

This research occurred at the University Belhadj Bouchaib in Ain Temouchent, Algeria. A combination of a questionnaire and interviews was utilized as research instruments to address this issue. The questionnaire was employed to gather information from a sample of 80 second-year Master's students specializing in Didactics and Applied Linguistics as Literature and Civilization. The objective was to gain insights into student's viewpoints, obstacles, and interactions with intelligence (AI) technologies. Additionally, interviews were conducted with seven English department teachers to explore their perspectives and their difficulties.

This study was structured around three main chapters: The first chapter focused on the theoretical framework, covering the applications of artificial intelligence and its relationship with educational development. The second chapter delved into the research methodology used. The third

chapter focused on presenting the data collected from the questionnaire and interview along with their discussion, proposing suggestions, limitations of the study, and critical recommendations.

CHAPTER ONE: Artificial intelligence in the academic setting

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1.1 Introduction

This chapter provides an overview of Artificial Intelligence (AI) in higher education, beginning with a definition and overview of AI and its relevance in the academic landscape. It explores the importance of AI initiatives in shaping modern educational paradigms, focusing on initiatives specific to Algeria. The chapter then delves into the impact of AI on student learning experiences and outcomes, highlighting positive effects, such as personalized and adaptive learning systems, alongside potential adverse effects, including concerns about technology dependence and equity/access issues. Additionally, it discusses how AI influences teaching methods, showcasing advantages such as automation of routine tasks and data-driven decision-making while addressing challenges such as resistance to change and the need for teacher training. The chapter also examines the current applications of AI in Algerian Higher Education, including case studies and examples. It outlines the challenges and opportunities related to technological infrastructure and capacity building. Finally, it concludes with implications for policy and practice, offering insights into leveraging AI for educational advancement in Algerian higher education institutions.

1.1.1 Artificial Intelligence: Definition and Overview

Defining AI can be challenging as it encompasses various aspects and continuously evolves with technological advancements. However, a widely accepted definition describes AI as a technology that empowers computers to mimic human abilities such as learning, reading, writing, and speaking. According to McCarthy (2012), the pioneer of the term "Artificial Intelligence" in 1955, "It is the science and engineering of making intelligent machines, brilliant

computer programs. It is related to the similar task of using computers to understand human intelligence" (What is AI? Section), it sums up the essence of Artificial Intelligence. It implies that AI aims to develop machines that display intelligent behaviors similar to those of humans. Minsky 1969 (as cited in Bolter,1984) states that "… the science of making machines do things that would require intelligence if done by men" (p. 1). It focuses on the scientific nature of artificial intelligence. In essence, AI involves the development of methodologies, algorithms, and technologies that impact machines' intelligence capabilities.

Interest in the possibility of artificial intelligence began with the invention of the programmable digital computer in the 1940s. However, in the Summer of 1956, US computer Scientists and Mathematicians came together to conduct a research project. They wanted to develop self-learning systems that could solve problems requiring human intelligence. In the 1960s, the first AI developers were thinking big; they created the first autonomous robot called Shakey. Researchers found that the real world was much more complicated than the specific problems they were addressing. As a result, their excitement about work is gone, leading to a slowdown in progress in the field of Artificial Intelligence (AI Winter). During the 1980s, the government started to give AI Projects another chance by purchasing them, which marked a period of rapid growth and interest in AI. In the 1990s and 2000s, artificial intelligence continued to evolve, taking significant steps forward in robotics, computer vision, and understanding human language. (Plattform Lernende Systeme, 2019)

1.1.2 Importance and Relevance of AI in HE (Higher Education)

Higher education is one of the different types of education offered in post-secondary institutions. In addition, it provides training in various fields, including medicine, law, business, arts, and music (The Editors of Encyclopaedia Britannica, 2024, para. 1). However, the quality of higher education, artificial intelligence is considered one of the most critical technologies that can be used in education. AI applications can reduce the burden on traditional management systems and provide high-quality services. By transforming them into AI-based electronic systems, they can play a role in helping to inform the correct managerial decisions. To ensure the best possible education for students, courses and teaching sessions should be assigned to teachers based on their abilities and preferences. It means that teachers who are exceptionally skilled in a specific area should be given courses that align with their skills.

Similarly, teachers who have a preference for a specific subject or teaching style should also be considered when assigning classes, courses, and teaching sessions based on teacher's abilities and preferences, that is to say, teachers who are skilled or preference in specific capacity should be given courses that align with their proficiency. Additionally, for students who have difficulties in learning, providing them with additional support through direct communication. This offers all students the resources they need to succeed; also, it is essential to select talented students to ensure that they have a particular program to improve their abilities (Kebdani, 2021, p. 173).

1.1.3 Brief overview of AI initiatives in Algeria

Aboubekr, 2020 (as cited in Chouini, 2022) states that in December 2019, researcher Ahmed Qasum, who is the Director of the Artificial Intelligence Lab at the University of Bab Ezzouar, delivered a lecture on the journey of artificial intelligence in Algeria and its future. During the lecture, he compared Algeria's progress in AI research with other countries. He mentioned that 116 research labs in Algeria specialize in artificial intelligence, and they comprise 568 research teams that have 6,169 affiliated researchers. These researchers are working across 40 universities nationwide (p. 13). "Algeria is invited to develop the field of artificial intelligence as quickly as possible." As confirmed by the Minister of Higher Education and Scientific Research Tayeb Bouzid during a press conference to discuss the National Strategic Plan for AI 2020-2030, he underlined the importance of developing the field of artificial intelligence (AI). The minister underscores Algeria's human resources in advancing AI research and development.   He also spoke about supporting young AI researchers and making them a part of the country's effort while keeping Algeria's culture and identity. (APS, 2019)

The National Higher School of Artificial Intelligence (NHSAI), which opened its academic season in 2021/2022 in Sidi Abdellah, Algiers, is considered one of the newly added higher schools for computer science among the other schools located in Algiers, such as Bouzaréah, Sidi Bel Abbès, and Béjaïa. Since it trains engineers, the training is organized into two stages. The first stage begins with two preparatory years specific to the school. Each academic year consists of 4 terms, lasting for seven weeks. In each term, students study a maximum of 4 educational units. However, it is a requirement for students to achieve high grades in each subject, according to the academic system. This way, a percentage of the best-ranked students

will be accepted based on their grades to progress without competition to the third year. This stage aims to establish students in the fundamental concepts and skills they need to successfully pursue their studies in subsequent stages. The second stage involves studying for three years in the specialized field at the end of the two preparatory years, as it focuses on developing specialized knowledge and practical experience in artificial intelligence and related engineering.

Moreover, the curriculum at the NHSAI has been designed by experts who considered the latest curricula for teaching artificial intelligence in leading global universities. This curriculum is robust in AI and machine learning skills, complemented by intensive practical training (including robotics, designing simple electronic systems, etc.). Students also study business management courses (company management and organization), project management, and courses in innovation and entrepreneurship. They also participate in relevant seminars, field training within companies, and workshops. The curriculum includes intensive English language courses, courses in academic discourse (both oral and written), mathematics courses, several courses in computer science, numerous courses in artificial intelligence and its applications, courses in entrepreneurship, management, entrepreneurship, and innovation (NHSAI, 2022)

"The US plays a small role in supporting the commendable initiative by the Algerian Ministry of Higher Education. At the beginning of October, the US embassy in Algeria officially launched the Research Hub, which is a three-year project managed by Notre Dame University state of Indiana, USA, to create networks of research institutions inside and outside of Algeria

and encourage greater cooperation between Algerian universities, researchers and the private sector. The second objective is to increase the capacity of universities like Sidi Abdallah Technopole to undertake innovative research and, more specifically, academic research that has an impact on improving the Algerian economy." (U.S. Embassy Algiers, 2021, 01:19)

1.2 The Impact of AI on Student's Learning Experiences and Outcomes

The integration of artificial intelligence (AI) in higher education has generated significant impact on students' learning experiences and academic outcomes. With the continuous evolution of AI technologies, traditional educational paradigms are being reshaped, providing a platform for unique and innovative opportunities. AI has the potential to personalize learning experiences, improve accessibility, and enhance educational outcomes, but it also introduces challenges related to equity and access issues, and potential for dependence on technology.

1.2.1 Personalized Learning

Personalization in education, driven by AI, tailors learning programs to students' individual needs, adjusting to their knowledge level, learning pace, and goals while analyzing past performance to offer personalized improvement opportunities (Imoh, 2023, p. 6). That is to say, each student learns in a way that fits him best. It is like having a customized learning plan just for him, based on how he knows, what he likes, and what he needs to improve, rather than using a one-size-fits-all method. Here is how AI facilitates personalized learning:

1.2.1.1 Individualized content

AI-powered platforms use data from previous students' interactions to understand how they learn and what they like; based on this information, AI algorithms suggest learning resources like articles and videos to match each student's needs and goals. Mishra (2023, p. 577)

1.2.1.2 Adaptive assessment:

"Adaptive assessment can be defined as any type of assessment that is tailored specifically to each examinee, based on their performance on previous items on the assessment." (Papanastasiou, 2014, p. 18), which means that it is a test that adjusts its questions based on how well the examinee is doing in his last assessment. As the test progresses, if he answers a question correctly, the next one might be harder, and if he answers incorrectly, it may lead to more straightforward questions. Therefore, it can figure out precisely what they already know and need. For example, before the student starts using the AI-based application, the student takes the test; the application analyzes the test result and can provide student development by giving new tasks as needed (Kuprenko, 2020, as cited in Alanoğlu, 2021, p. 181).

1.2.1.3 Personalized feedback:

Feedback can be one of the most powerful learning tools in education, but it is difficult to

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Feedback can be one of the most powerful learning tools in education. However, it is not easy to use in some higher educational settings (Hattie & Timperley, 2007, as cited in Riezebos et al., 2023). Here is the crucial role of AI-powered platforms: they can provide personalized feedback to each student. AI can analyze student responses and provide feedback to improve their performance. It identifies areas that require improvement and suggests ways to enhance learning. Mishra (2023, p. 577)

1.2.1.4 Self-Paced Learning:

Self-paced learning means that the students are the owners of their studies; having a disability or learning difficulties or being a full-time worker can impact the learning speed. However, these AI technologies give a higher chance to these learners since not all of them learn at the same speed (What Is Self-Paced Learning? Definition, Benefits and Tips | Digital Learning Institute, n.d., para. 5). "In today's world, young people spend much time on the move. Therefore, they prefer to use their smartphones or tablets to do their daily tasks more often. AI-based applications allow students to use their free time to study for ten to fifteen minutes at a

time. It means that these technologies can take learning beyond the concepts of time and space. In this way, education can become more widespread and effective." (Alanoğlu, 2021, p. 181)

1.2.2 Adaptive learning systems

Adaptive learning systems are educational tools that personalize the learning experience based on each student's abilities, preferences, and progress. These systems use advanced algorithms to interact with students, suggest content modules based on their mastery level, and give real-time feedback and support. However, there are different adaptive systems, including Advanced Algorithm Adaptive Systems, Rules-Based Adaptive Systems, and Decision Tree Adaptive Systems, each with unique approaches to tailoring learning paths and feedback (Pugliese, 2016). In addition, adaptive learning platforms such as EdApp, Adaptemy, and Knewton are leading the way in technology by offering personalized learning paths, real-time adjustments, and data-driven insights that improve engagement and optimize learning outcomes. Adaptive learning is a promising tool for educational institutions and corporations, providing tailored learning experiences, continuous assessment, and improved retention rates (Small, 2023). Eventually, when used effectively, adaptive learning enables personalized learning practices, enhances student engagement, allows self-paced learning, and can be a cost-effective alternative to traditional textbooks (McGuire, 2021).

1.2.3 Improved Student Engagement

Student engagement in higher education involves actively participating in academic and extracurricular activities, connecting with faculty, engaging in civic activities, and learning outside the classroom (Student Engagement | National Center on Safe Supportive Learning Environments (NCSSLE), n.d.). Artificial Intelligence (AI) can impact student engagement in

higher education through various means, including personalized learning experiences, adaptive assessments, and automated feedback, enhancing student engagement and motivation. Additionally, AI can recognize student success and engagement patterns, which helps instructors provide tailored instruction and support students with individualized learning pathways. By providing adaptive learning experiences and supporting competency-based education models, AI helps create a more engaging and personalized learning environment, ultimately improving student engagement in higher education (McIntosh, 2023). Conversely, problems with access and equity, as well as students' eventual reliance on AI, are some ways in which AI negatively affects higher education.

1.2.4 Potential for Dependence on Technology:

Mahdi Siena (2024) posted an article about the effects of AI on education, emphasizing the opposing side. One of the downsides of relying on AI in education is that it may hinder student's problem-solving skills and work ethic. With AI, students can complete challenging tasks, providing them with accurate and relevant information in a matter of seconds. However, this may cause them to rely too heavily on technology for tasks meant to help them develop crucial skills. Furthermore, this dependence can also lead to a lack of work ethic among students. They may start thinking that leaving the AI tools to do the work for them is acceptable. Thus, this can harm their future success.

The second adverse or significant concern is the lack of human interaction. While AI can provide personalized educational services, it cannot replace the human touch teachers bring. Teachers are better equipped to address student's unique needs and challenges. They can personalize their teaching styles to cater to individual students. Teachers are essential in students'

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academic and social development, providing a sense of physical interaction that AI cannot replicate. They also help students develop social skills, such as communication, collaboration, and empathy, which are critical to their growth.

In summary, while AI can be a valuable tool in education, it is essential to ensure that students are not becoming overly dependent. Instead, educators should balance utilizing technology to enhance learning and encouraging students to develop their problem-solving skills and work ethic.

1.2.5 Equity and Access Issues

Artificial Intelligence (AI) has the potential to revolutionize education by providing personalized and adaptive learning experiences. However, equity and access issues also need to be addressed. One of the significant challenges is the digital divide, which can hinder some students' ability to access and use AI tools effectively. Students who do not have access to a high-speed internet connection or the required hardware may struggle to execute more sophisticated queries or run AI models.

Furthermore, the cost associated with AI tools can be a barrier for some students. Generative AI tools, in particular, can be expensive to train and run, making them inaccessible to many students. It can further worsen the digital divide, as students from less affluent backgrounds may not have the resources to invest in these tools. (Van, 2023)

1.3Effects of AI on Teachers and Teaching Methods

The integration of Artificial Intelligence (AI) in education has led to significant changes in teaching methods and the roles of teachers. AI has the potential to personalize learning experiences for students, offering tailored content and feedback. Educators are now required to adapt their instructional approaches to incorporate AI tools and ensure that students are equipped with the necessary skills to thrive in an AI-driven world. While AI presents opportunities for more efficient and effective teaching, it also poses challenges such as the need for educators to acquire new skills and knowledge to harness AI effectively in the classroom.

1.3.1Advantages

Artificial intelligence provides many benefits for educators, including automating routine tasks, offering enhanced instructional support, and enabling data-driven decision-making. These advantages contribute to improved teaching efficiency, personalized learning experiences, and actionable insights to better support student's success.

1.3.1.1Automation of Routine Tasks

Teachers have important tasks to fulfill in education, such as grading, assessment, and data analysis. However, the situation in Algerian higher education classes is disastrous, as the number of students in each class is far too high for teachers to provide the necessary level of assistance. It is essential to consider AI technology to help them do the most difficult routine tasks. For example, assessment and evaluation are repetitive tasks that take time and need to be entirely focused on giving the best feedback students need; there are AI tools that can do the job

perfectly in grading essays and provide instant feedback, leaving time for the teachers to focus on other essential things like lesson plan and more one-on-one attention to students (Nomerovska, 2024, para. 17). Additionally, AI can also help teachers refine their instructional strategies by offering insights into what works best for their students, "AI-powered EdTech tools can easily collect, analyze, and provide report data to teachers on student learning outcomes and behavior patterns." (Adlawan, 2024, para. 6). In short, the incorporation of AI in education allows teachers to optimize their time, personalize learning experiences, and develop essential skills in students for the future.

1.3.1.2 Enhanced Instructional Support

AI-powered tools can significantly improve instructional support for teachers in various ways, such as personalized learning, productivity, content creation, and ethical considerations. First, Teachers can leverage AI-driven analytics to gain insights into individual student performance and learning trends. Teachers can use this data to adapt learning materials, such as videos, interactive learning modules, or quizzes, to meet each student's unique needs. This approach allows for highly personalized and tailored learning experiences, helping students to achieve their full potential. Second, grading papers, generating reports, and managing administrative duties can take much time. They can be handled with AI tools like Copilot "is an excellent AI tool for teachers as it can quickly generate handouts that cover everything a teacher and a student need to know about a specific topic, concept, or subject area." (Van Dam, n.d., para. 15). Third, creating content is an essential act in teaching in which it enhances learning experience and support curriculum objectives, again AI tools like ChatGPT can assist teachers in planning lessons providing them with creative ideas; Bacon, a previous English

teacher emphasize the positive effect of ChatGPT in helping teachers "For example, if students are doing a unit on introductions, a teacher might provide examples of what a developing, grade level, and exceeding grade level introduction might look like. Instead of a teacher having to write all the examples, the examples can be generated by ChatGPT." (Gobir, 2023, para. 6). Therefore, taking advantage of the power of AI, teachers can develop their teaching methods, improve student engagement, and create a better learning experience for their students.

1.3.1.3 Data-Driven Decision Making

Higher education instructors constantly rely on a variety of learner data to gain a deeper understanding of their class and individual students, to provide learners with meaningful feedback, and to reflect upon their teaching (Harindranathan & Folkestad, 2019; Leitner et al., 2017; Picciano, 2012) (as cited on Usher & Hershkovitz, 2023, p. 171). Teachers can use various digital tools to collect data about their students. Digital assessment platforms, such as online quizzes and tests, provide instant feedback to teachers and students. Learning management systems, like Google Classroom, centralize student progress data, allowing teachers to assign and grade assignments, track attendance, and communicate with students and parents. These tools help teachers understand students' needs and tailor their instruction accordingly. (Innovare, 2023, para. 16). Overall, associating with AI empowers teachers to improve teaching, meet diverse student needs, and navigate data-driven decisions effectively.

1.3.2 Artificial Intelligence Application Challenges

Artificial intelligence (AI) has the potential to revolutionize the field of education by providing personalized learning experiences, automating administrative tasks, and offering insights into student performance. However, implementing AI in education is not without its

challenges. These challenges include concerns about resistance to change, and the need for effective teacher training to integrate AI tools into the classroom. It is important for educators and policymakers to address these challenges in a responsible and effective manner to fully harness the benefits of AI in education while modifying potential risks.

1.3.2.1 Resistance to Change: will AI replace teachers in higher education?

Despite the increase in AI in education, there has been a lack of focus on teachers' insights and experience in AI technology. This results in a gap in understanding the role of teachers in successfully incorporating AI into teaching practices. Teachers' perspectives, experiences, and expectations are crucial in integrating AI into education. Therefore, it is vital to consider the dual impact of AI on them, both the advantages it offers and the challenges teachers face when using it. Hence, by addressing these aspects, AI can be tailored to meet the specific pedagogical needs of teachers, improving its significance and efficiency in educational settings (Celik et al., 2022) page needed.

The possibility of AI replacing teachers is a concern among educators. This concern comes from automating tasks like grading and creating lesson plans and AI's ability to give students more personalized learning. In a study by Chan and Tsi (2023), a teacher stated, "I would like to see if AI can teach students like a human. Students can already communicate with AI as a human. If yes, AI can replace teachers." Some teachers hold the belief that their roles in education are irreplaceable, emphasizing, "It cannot replace teachers' input, at least at the moment, because AI cannot tell the students in detail, and the students need to know what questions to ask" (p. 10). It is important to note that implementing AI in education is not to

replace teachers but to supplement their efforts and provide additional help to students. "However, to incorporate these tools effectively, teachers should have a comprehensive understanding of the dimensions where generative AI technologies can work well with teachers and students, the conditions that need to be avoided to prevent generative AI technologies from working against teachers." (Chan and Tsi, 2023, p. 14)

1.3.2.2 Need for Teacher Training

The need for teacher training in AI is crucial for several reasons. One of the reasons is that artificial intelligence (AI) applications are expected to be prevalent across various fields and industries in the future; AI has the potential to transform teaching and learning processes, making it essential for educators to be aware of how AI can enhance student outcomes and streamline administrative tasks (Report on Education, Training Teachers and Learning Artificial Intelligence | Knowledge 4 All Foundation Ltd., n.d.).

Teachers need to take the time to accept the idea of incorporating AI technology in their teaching as a tool. It means using it in their teaching methods with various approaches and exploring how it can improve their professional development. By spending sufficient time, teachers can understand its potential applications in the classroom and explore different teaching strategies through trial and error. (Langreo, 2023)

In summary, it is crucial to provide teacher training in AI to ensure that educators comprehensively understand the fundamental concepts of AI. It will enable them to adapt to new AI applications, support students, and use AI tools responsibly, ethically, and appropriately.

Additionally, proper training will allow teachers to provide tailored learning experiences and gain confidence in working with AI, allowing them to collaborate with colleagues and integrate AI literacy into professional development programs.

1.4 AI Applications in Algerian Higher Education

The use of artificial intelligence (AI) in Algerian higher education is changing the academic environment by providing new tools and methods to improve learning, research, and administrative processes. In this section, we will examine the different ways AI is being used in universities and colleges throughout Algeria, and how it is affecting the quality and accessibility of education.

1.4.1 Current Landscape

Artificial intelligence has become a prominent voice, as Algeria announced 2023 its development and integration across various sectors. The Ministry of Higher Education and Scientific Research plays a fundamental role in this initiative by establishing an Artificial Intelligence Council. Algeria has demonstrated its commitment to integrating artificial intelligence (AI) into economic, educational, and research development by creating specialized institutions such as the Higher School of Artificial Intelligence and increasing the number of AI-dedicated laboratories across universities and research centers. This development highlights the strategic importance of AI for national and international competitiveness and innovation. AI is also transforming education and the economy in various ways. For example, AI-powered platforms like Coursera provide personalized learning experiences, while in the economy, AI

helps predict market trends and improves business operations through automation and data analysis. (Ali, n.d.)

1.4.1.1Case Studies or Examples of AI Implementation:

Bakhtaoui, B., 2022, The Reality of Artificial Intelligence application and its Impact on Improving the Quality of Higher Education: University of Adrar as a Model, Journal of Economic Integration; this study aims at knowing the role of Artificial Intelligence in improving the quality of higher education by relying on the questionnaire for the data collection on the variables of the study. Adrar University's faculty and administrative staff selected a random sample of sixty-eight singles. Using the plspm package, R software was used to analyze the data, and the study concluded that there is no interest on the part of the university in the advanced modern technologies that improve the quality of higher education.

LARBI, Q, Dr. BELGAID, M, 2021, Investigating the Main Challenges Facing the Integration of Artificial Intelligence in Scientific Research in Algerian Higher Education: A Socio-Economic Perspective, Conference paper, the present study aims to outline the socio-economic obstacles that the Algerian universities and scientific research centers encounter regarding the integration of artificial intelligent in the field of scientific. To this end, a study has evaluated the related literature about AI, its history, and its utility in science and scientific research. It has been concluded that, on the one hand, AI is beneficial for scientific research. On the other hand, Algeria is somehow far from these technological advancements since it is facing

some socio-economic challenges. Thus, encouraging the use of AI in scientific research would be of paramount significance to Algerian Higher education.

Kebdani, S, Baden, A.,2021, dealt with the importance of using artificial intelligence applications in Algerian higher education institutions in ensuring the quality of education – an empirical study**,** Boadex book magazine. This research paper aims to determine the relative importance of using artificial intelligence applications in Algerian higher education institutions and its role in ensuring the quality of education because of internationally recognized standards. We concluded that the use of artificial intelligence applications in Algerian higher education institutions is considered a priority at present by more than 81 percent from the point of view of the vocabulary of the research paper sample at present time, and there is an urgent need to use these applications with all scientific and human disciplines.

1.4.2 Challenges And Opportunities

The implementation of AI in Algerian higher education brings both challenges and opportunities.

1.4.2.1 Technological Infrastructure

Despite continuous technological progress in the infrastructure, which can be attributed to efforts at a purely technical level, this progress is not as expected. The overall picture of Algeria in terms of digital economy remains unsatisfactory. The numbers and visible situations lead us to some indications revealing a general lag in many indicators, as reflected in Algeria's rankings regionally and globally, which were mainly above a hundred, indicating a modest performance in governmental policies to boost the digital economy. It is primarily due to the lack of a clear

strategy in governmental policies, where investments in the Information and Communication Technology (ICT) sector do not translate into tangible competitiveness, development, and employment benefits. It suggests the seriousness of the situation and hinders reducing the digital divide. Therefore, the study recommended that the state work to mitigate this deterioration by developing a digital development strategy that is much broader than the current strategy for ICT, ensuring more significant gains and abundant digital returns for every individual and in every place. It also emphasized the necessity of building digital infrastructure, especially broad-spectrum infrastructure and ensuring its accessibility to all users at various levels, including the education sector, especially students and teachers (Sellami, 2020, p. 607)

1.4.2.2 Training and Capacity Building:

In a previous study about addressing ethical issues in the development of AI policies in North Africa, Stahl et al. emphasized that almost all the countries in North Africa have initiated processes to develop and implement policies related to artificial intelligence (AI) to ensure safe deployment, harness economic potentials and ensure ethical use of AI. Additionally, the author added Algeria as an example, as it presented its National Artificial Intelligence Strategy 2020–2030 on the 18th of January, 2021, to "improve Algerian skills in the field of AI through education, training and research, on the one hand, and strengthen these capacities as a development tool allowing socio-economic sectors to iron out the obstacles hindering the digital transition underway, on the other hand" ("Strategy for research in artificial intelligence launched" 2021, cited in Stahl et al., 2023,p. 152). therefore, to ensure the necessity of training, which enhances the educational systems on one hand and higher education administration on the other hand, as Bakhtaoui (2022) stated in her recommendations from the findings of her

study, "Holding training courses for faculty members and learners to develop their skills and train them on applying artificial intelligence techniques and its positive effects in improving the educational process." (p. 253)

1.5 Conclusion

This chapter aims to explore the artificial intelligence situation in Algerian higher education, and it is attached with an overview and history of artificial intelligence. It emphasizes AI's dual impact on students, challenges, and advantages on teachers and teaching methods. In addition, it highlights the current state of AI in Algeria and the challenges and opportunities that come with it.

Chapter Two: Research Methodology and Data Collection

2.1Introduction

This chapter outlines the methodology used to study AI tools in academic tasks. It covers the sample population, research instruments, validity and reliability, and data analysis methods for student questionnaires and teacher interviews. The study targets students and teachers to collect diverse perspectives on AI usage in academic tasks. The research instruments include questionnaires for students and interviews with teachers to understand the perceptions, challenges, and benefits of AI integration. To ensure validity and reliability, the instruments underwent pilot testing. Data analysis involves quantitative methods for student questionnaires and thematic analysis for teacher interviews. This chapter lays the basis for exploring findings and implications regarding AI's impact on academic tasks and instructional practices.

2.2Research Method

The primary focus of this research is to examine how Artificial Intelligence impacts higher education in Ain Temouchent, Algeria. The study seeks to identify the benefits and obstacles associated with incorporating Artificial Intelligence tools into the higher education system. To achieve the goals the researcher sets, she employs a descriptive case study approach, which permits a thorough analysis of a particular phenomenon in real-world circumstances, providing a detailed investigation of the subject matter. In this instance, the study delves into the diverse uses of Artificial Intelligence in various aspects of higher education in Ain Temouchent. The objective is to bring to light the implications and nuances of this technological integration.

Calderon (2006) defined descriptive research as a purposive process of gathering, analyzing, classifying, and tabulating data about prevailing conditions, practices, processes, trends, and cause-effect relationships and then making adequate and accurate interpretations about such data with or without or sometimes minimal aid of statistical methods. Also, this method ascertains prevailing conditions of facts in a group under study that gives either qualitative or quantitative, or both, descriptions of the general characteristics of the group as results.

Considering the nature of this study, a mixed-method design is employed. Mixed methods research implies using both quantitative research (numerical data) and qualitative research (non-numerical data). According to Dornyei (2007), "Mixed methods research involves different combinations of qualitative and quantitative research either at the data collection or analysis levels. Typical example: consecutive and interrelated questionnaire and interview studies" (p.24).

2.3 Setting and Sample Population

The study was conducted at Ain Temouchent University, and the target population for this research was Master 2 reading English.

2.3.1The Research Setting

The settings in a research study refer to the physical, social, or experimental context in which the research is conducted. It includes the location, period, population, and environmental factors (Editage Insights, 2022).

To explore the impact of Artificial Intelligence Tools in Algerian higher education. The researcher has opted for a case study as the chosen research method. This study is at the University of Ain Temouchent during the academic year 2023/2024.

2.3.2Population

A critical educational research component is sampling, which is choosing a representative sample from a broader population. According to Martínez-Mesa et al. (2016): "sample is a finite part or subset of participants drawn from the target population. In turn, the target population corresponds to the entire set of subjects whose characteristics interest the research team" (p.326). The researcher must carefully choose a representative sample of participants based on relevant qualities and characteristics that align with the research design, as it is impracticable to investigate the entire population.

The researcher chooses second-year Master's students from two specialties: Didactics and Applied Linguistics and Literature and Civilization. The Didactics and Applied Linguistics specialization are organized into two groups, each comprising 27 students, while the literature and civilization specialization constitute a single group of 22 students. This careful categorization aims to represent the diverse academic pursuits within the English department comprehensively.

In addition to student participants, the research incorporates the perspectives of faculty members from the Department of English. Seven teachers have been selected for interviews, with two dedicated to teaching Didactics and Applied Linguistics and the remaining two

focusing on Literature and Civilization. These educators, chosen for their expertise and insight into the respective disciplines, will provide valuable perspectives on integrating Artificial Intelligence in language instruction. By engaging students and teachers across these specialized domains, this study aspires to offer a holistic understanding of the educational landscape at the intersection of Artificial Intelligence and language pedagogy at the University Belhadj Bouchaib in Ain Temouchent during the specified academic year.

2.4 Research Instruments

Any research investigation would be incomplete without research instruments. A research instrument is a scientifically and methodically developed tool for collecting, measuring, and analyzing data linked to research objectives and alignments (Oben,2021, p.114). Hence, this instrument's importance is gathering information, uncovering insights, and enhancing knowledge in the research area. In this study, the researcher has used two research tools: questionnaires and interviews. Each tool has its unique role, bringing distinct advantages and limitations to the research process.

The questionnaire is a systematic method for collecting data and opinions on specific topics. It involves posing questions to individuals to gather statistically valid information about a particular subject. However, for the study, the researcher opted for an online questionnaire due to its efficiency in swiftly collecting a substantial amount of data while remaining cost-effective.

Additionally, a structured interview was used for seven teachers from the Department of English to capture detailed and rich insights into their experiences and challenges through this method. George (2023) defines the interview as a qualitative research approach that collects

data by asking questions. Interviews are conducted by two or more people, one of whom is the interviewer who asks the questions (para. 1).

2.4.1 Pilot study

A pilot study is a preliminary investigation to determine whether a particular action is possible and, if so, how to proceed. It is designed to be conducted on a smaller scale than the principal or full-scale study. The primary objective of a pilot study is to improve the quality and efficiency of the central survey (Junyong, 207). In this research, a pilot study was conducted with 15 students to test the questionnaire for this research project. No issues or challenges were faced during the study, as participants responded to the questions efficiently.

2.4.2 Questionnaire

The research involved distributing an online questionnaire to 80 students, all of whom responded; the questionnaire comprised twelve questions, ten closed-ended and two open-ended questions.

Table2.1student's questionnaire objectives

Questions	Objectives
Q1	To know the student's gender distribution.
Q2	To reveal the students' field of study.
Q3	aims to assess students' familiarity with Artificial Intelligence (AI) in academic tasks.
Q4	It is set to know the student's curiosity level to incorporate AI-based Tools in their learning process.

Q5	It seeks to understand how students perceive the value of AI in enhancing their learning outcomes, regardless of the limited use.
Q6	It is set to know the potential enhancement of AI tools on academic performance from the student's perspective.
Q7	It aims to know whether the students use the AI Tools to help them with their writing assignments.
Q8	It seeks to know the AI tools most used by the students.
Q9	Aims to know the frequency of use of AI tools in students' academic tasks.
Q10	It is set to determine if they mention when they use AI tools in their assignments.
Q11	It aims to understand students' specific actions after using AI tools in their assignments.
Q12	It seeks to identify perceived barriers to the widespread adoption of AI in academic settings.

2.4.3 Interview:

An interview was conducted with seven teachers from the Department of English to learn more about incorporating AI-based technologies into university teaching procedures. The interview consisted of ten structured, eight open-ended, and two closed-ended questions.

Table 2.2Teacher's interview objectives

Questions	Objectives
Q1	It is set to gather information about the teachers' experience level in teaching.
Q2	It assesses whether teachers employ diverse teaching tools and methods in their teaching experience.
Q3	It is set to determine whether teachers have used AI-based applications in their teaching activities.
Q4	It aims to gather specific examples of AI-based applications used in teaching by educators.
Q5	It is set to know the teacher's level of interest in integrating additional AI-based elements into their teaching practices.
Q6	It aims to understand why teachers want to incorporate more AI-based elements into teaching.
Q7	Seeks to explore the participant's perspective on the potential benefits of widespread AI implementation in enhancing the teaching experience.
Q8	It aims to identify the difficulties or obstacles teachers encounter in integrating AI into their teaching methods.
Q9	It aims to identify the barriers or concerns that impede the widespread adoption of AI in teaching.
Q10	It aims to gather insights from teachers on how AI, despite its limited use, may have influenced their teaching experience.

2.5Validity and Reliability

The researcher used a mixed-method research approach to ensure the validity and reliability of this research on the impact of Artificial Intelligence (AI) in higher Algerian education. Methodological triangulation was utilized, combining qualitative and quantitative research methods to explore how AI applications can improve student engagement and learning outcomes and the challenges and opportunities associated with AI implementation in Algerian higher education, specifically in Ain Temouchent. Instrument triangulation further enhanced the validity and reliability of the study by collecting data through an online questionnaire sent to Master Two students specializing in English didactics and applied languages such as literature and civilization using Google Forms. The questions were understandable to reply to, ensuring clarity and accuracy. Additionally, interviews were conducted with key stakeholders, including seven teachers, in an online format via email, namely as an "online interview-style questionnaire". These methodological approaches were complemented by ensuring a conducive environment for data collection, transparent and unbiased questioning, and encouraging participants to provide honest and accurate responses. By employing these techniques, the researcher aimed to enhance the validity and reliability of my research findings regarding the impact of AI in higher Algerian education.

2.6Conclusion

This chapter presents an overview of the research methodology employed in investigating the incorporation of AI tools in academic tasks. The research used a mixed method, including a questionnaire with Master 2 English students and an interview with teachers from the University of Ain Temouchent (Belhadj Bouchaib). These methods helped gather data, explore how using AI Tools can make learning more engaging for students, and collect valuable insights into the challenges and opportunities teachers may encounter when implementing AI-based tools. The interview and questionnaire questions were provided, followed by their objectives.

Chapter Three: Data analysis and recommendation

3.1 Introduction

3.2 Description of the Questionnaire Results

3.3 Analysis of student questionnaire results

3.4 Teacher's interview

3.5 Analysis of teacher's interview results

3.6 Conclusion

3.1Introduction

The researcher will analyze the student's questionnaire and the teacher's interview in this final chapter. The researcher will summarize the key findings from the student's questionnaire regarding their use of AI tools in academic writing, providing a clear overview of the insights gained from the analysis. As exhibited in the previous chapter, the interview was conducted with seven teachers from the Department of English, and the researcher will delve into each question's results, in addition to the study's limitations and recommendations.

3.2Description of the Questionnaire Results

This section comprehensively analyzes the data gathered through two different data collection tools: the student's questionnaire and the teacher's interview. The analysis will encompass quantitative and qualitative approaches to provide a nuanced understanding of the research objectives and effectively address the research questions.

Question 1: what is your gender?

Figure 3-1student's gender
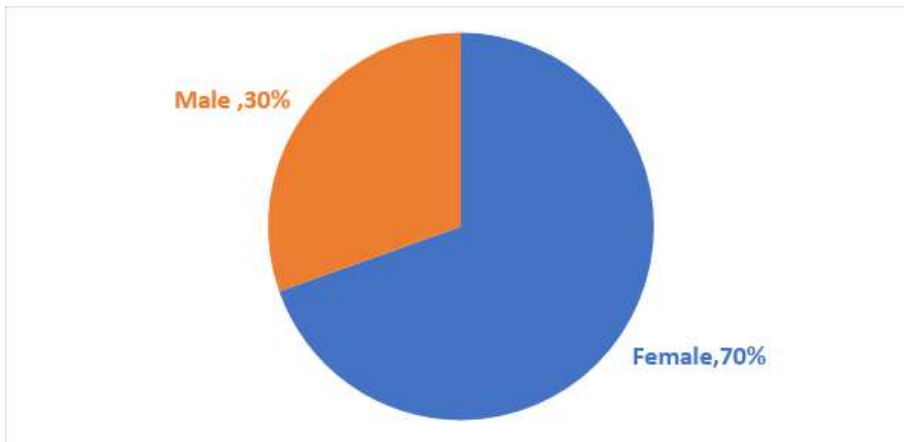
In this research, the first question was about gender, with two options for male and female respondents. The pie chart representing the gender distribution shows that 30% (Orange) of the respondents identified as male, while 70% (Blue) identified as female.

Question 2: what is your field of study?

Figure 3-2Distribution of Students by Field of Study
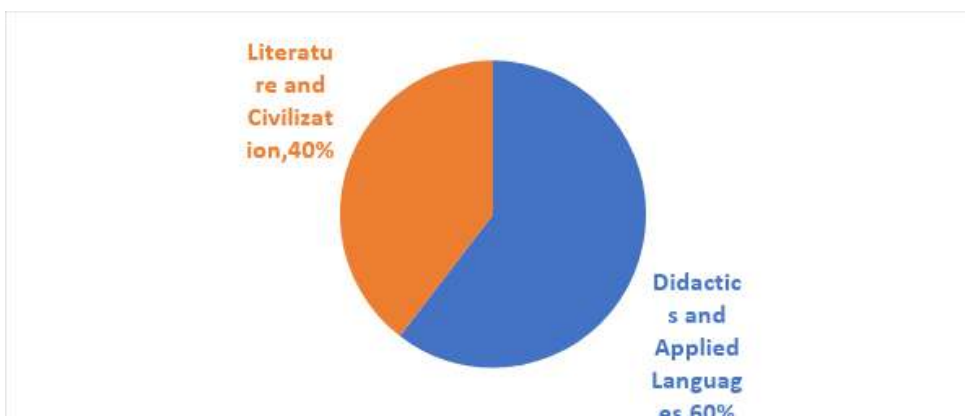
This pie chart represents the results of the multiple-choice question, with two options about the student's field of study (Didactics and Applied Languages, Literature, and Civilization)**.**

The pie chart shows that 60% (Blue) of the participants specialized in didactics and applied languages, while the remaining 40% (Orange) were interested in literature and civilization.

**Question 3:** How familiar are you with using Artificial Intelligence in your Academic Tasks?

Figure 3-3Levels of Familiarity with Artificial Intelligence in Academic Tasks.
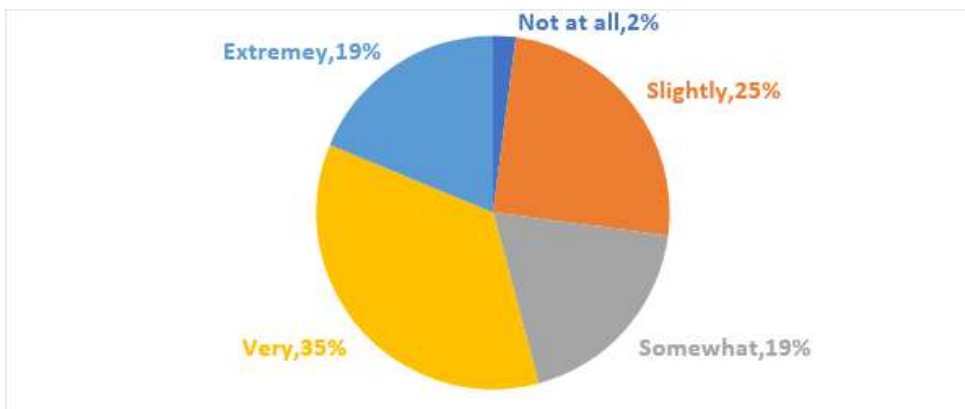
The pie chart on familiarity with using Artificial Intelligence (AI) in academic tasks reveals various responses**.** 2% of respondents feel entirely new to AI, while 25% expressed slight familiarity. About 19% are in the middle, somewhat comfortable but still exploring. Notably, 35% of respondents indicated a high familiarity with AI. Furthermore, there's a passionate 19% who are incredibly familiar.

Question 4: How interested are you in experiencing AI-based tools in your studies?

Figure3-4 Interest Levels in Experiencing AI-Based Tools in Studies
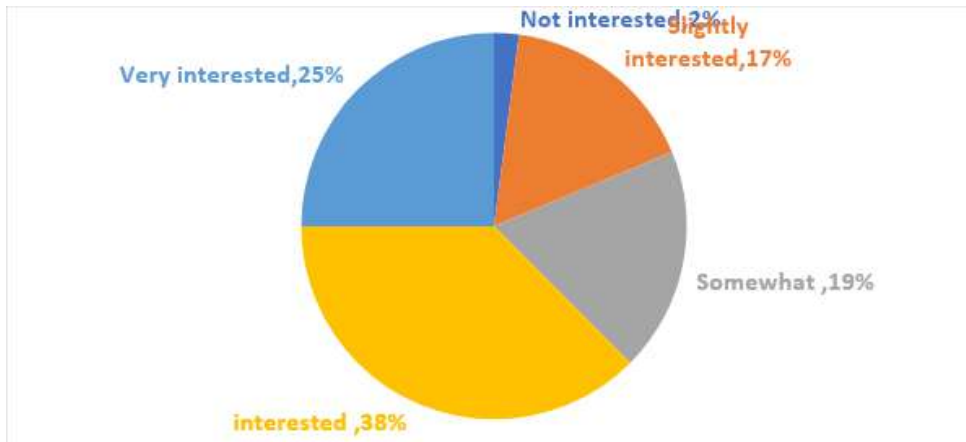
The result of the question on interest in AI-based tools for academic studies shows a range of engagement levels. While 2% are not interested, 17% are slightly interested, and 19% are somewhat interested. A significant 37% express a high interest, and 25% are extremely interested.

Question 5: How would you rate the impact of AI tools on your learning experience, even if the use is limited?

Figure3-5 Rating the Impact of AI Tools on the Learning Experience
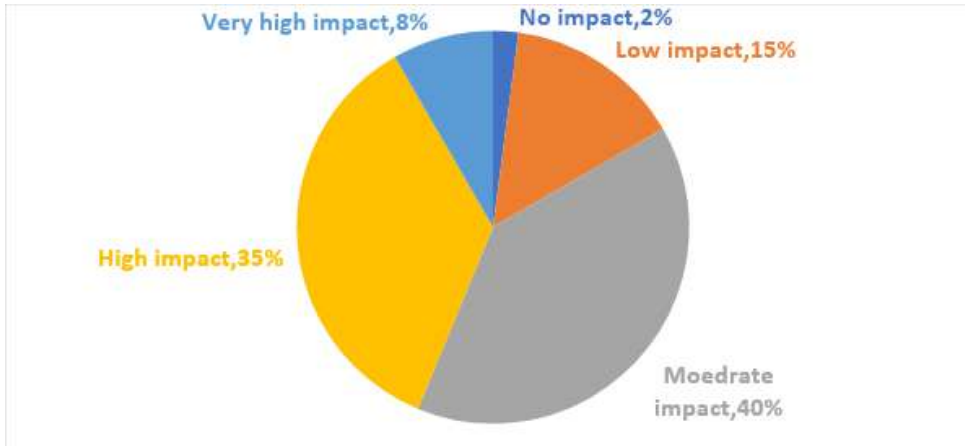
The pie chart illustrates the varying impact of AI tools on learning experiences, even with limited use. While a small section (2%) reported no impact, most students showed positive effects. Notably, 15% perceived a low impact, 40% noted a moderate impact, and 35% reported a high impact. Furthermore, 8% expressed a very high impact.

Question 6: To what extent do you think AI could enhance your Academic performance if more widely implemented?

Figure3-6 Perceived Enhancement of Academic Performance with Widely Implemented AI
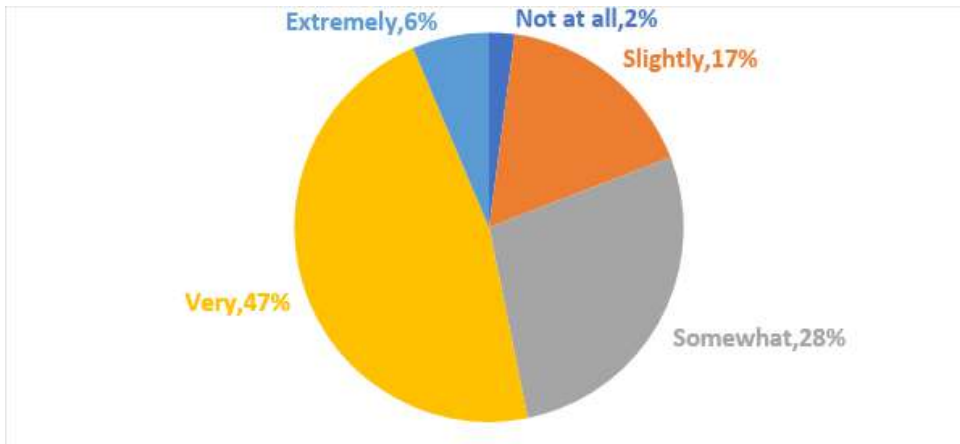
The pie chart displays student's perspectives on how widely implemented AI could enhance their academic performance. While a small group (2%) does not predict any impact, 17% anticipate a slight improvement. A notable 28% expect a moderate enhancement, and 47% believe AI could improve their academic performance. Additionally, 6% are extremely optimistic about the transformative potential of AI.

Question 7: Do you use AI tools to elaborate on your written assignments?

Figure 3-7 Usage of AI Tools in Elaborating Written Assignments
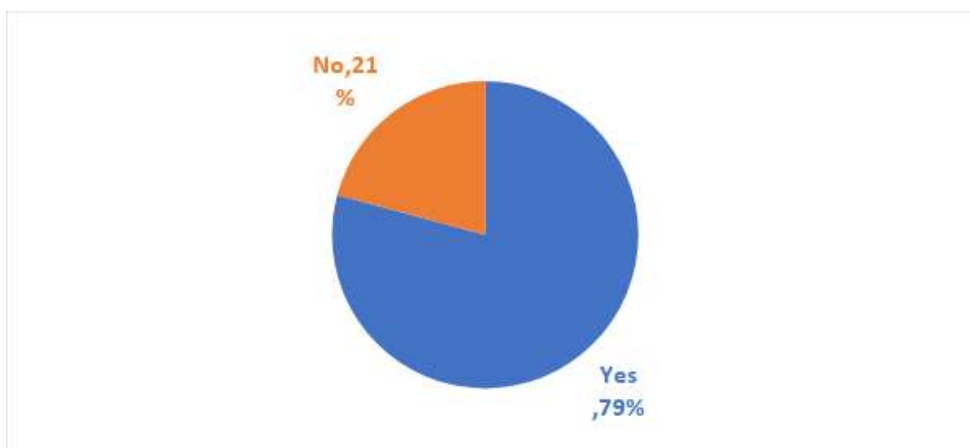
As the pie chart shows, 79% present the students who consider AI tools in their

academic writing, while the 21% left indicate the non-users of AI tools.

Question 8: If so, can you elicit the Tools?

Figure 3-8Frequency of AI tools use
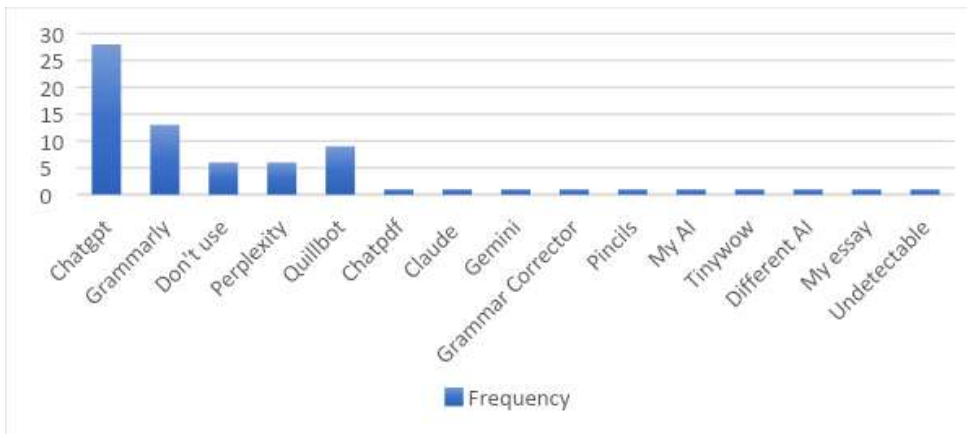
The column chart illustrates the tools students elicit for elaborating written assignments

after using AI tools. The most mentioned tools include ChatGPT, with 28 mentions; Grammarly,

with 13 mentions; Quillbot, with nine mentions; and Perplexity, with six mentions. Other tools

mentioned include Chatpdf, Claude, Gemini, Grammar Corrector, Pincils, My AI, Tinywow,

Different AI, My Essay, and Undetectable, each with one mention.

Question 9: How often do you use AI tools in your Academic Tasks?

Figure 3-9 Usage Frequency of AI Tools in Academic Tasks
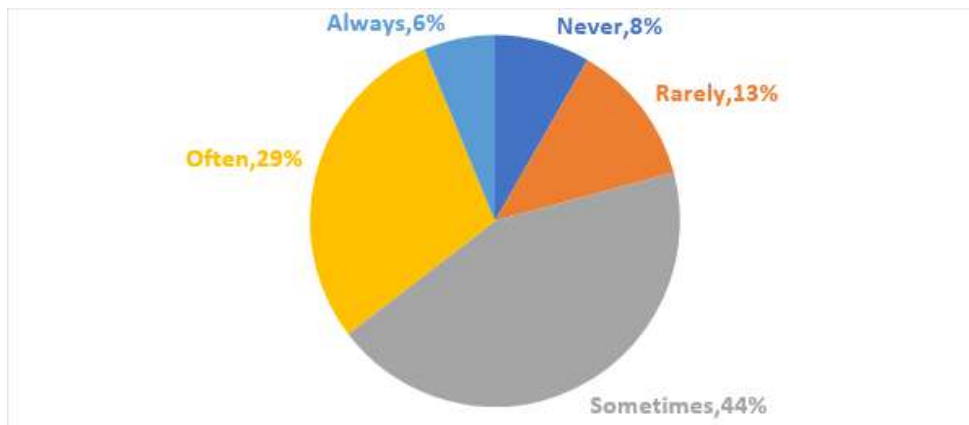
The   pie   chart

illustrates   the

frequency of usage

41

of AI tools in academic tasks among students. A notable (8%) indicated that they never use AI tools, while (13%) reported using them rarely. A majority of (44%) mentioned using it sometimes. Additionally, (29%) reported using it often. A smaller (6%) mentioned that they always use it.

Question 10: When using AI tools, do you mention it in your Assignments?

Figure 3-10 Inclusion of AI Tool Usage in Assignments
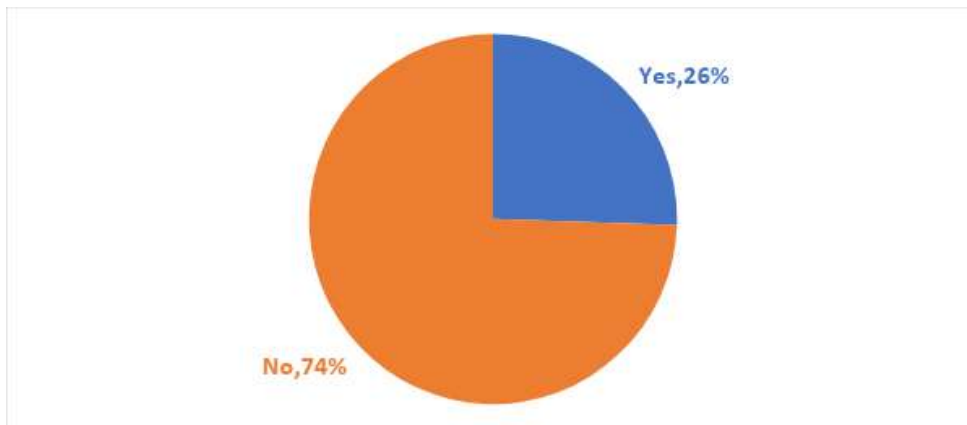
The pie chart shows that (26%) of students mention their use of AI tools in their assignments, while (74%) do not.

Question 11: How do you proceed?

- Write the subject for definition and further information.

- Use AI tools to change information, reformulate, or paraphrase.

- specific purpose (e.g., getting book recommendations, understanding literary genres)

- extract the main idea or significant points.

- Use AI tools as secondary material for additional insights.

- I don't mention it because these tools help me with grammar correction or giving more information, not depending on it all the time

- paraphrase the answer or citation.

- Prioritize transparency by mentioning AI tools used or citing references.

- Search for natural sources when using AI tools like GPT.

Question 12: What makes it difficult for AI to be widely used?

Figure 3-11 Challenges in Using AI
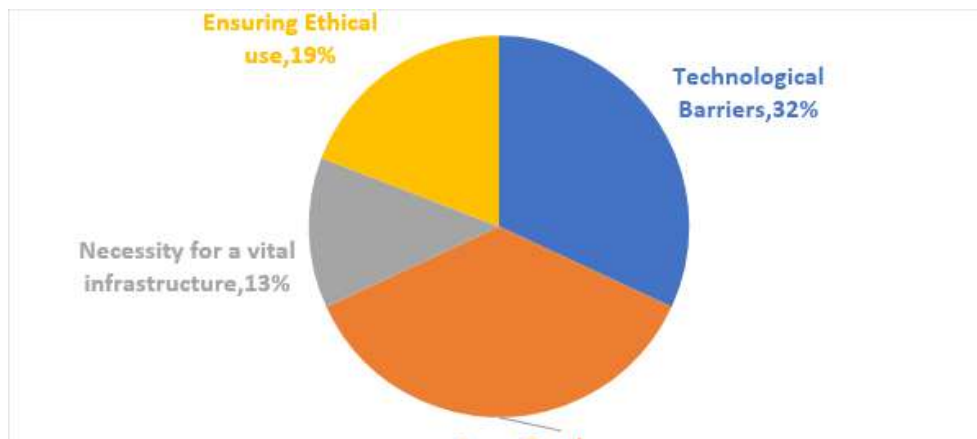
The pie chart displays the critical challenges identified as barriers to the widespread use of AI, as selected by students. Technological barriers were identified as a significant challenge by 32% of respondents. A substantial 36% noted the potential resistance from some teachers to adopt AI in their teaching methods as a barrier. Additionally, 13% mentioned the necessity for a vital infrastructure as a challenge, while 19% emphasized the importance of ensuring the ethical use of AI.

3.3Analysis of student questionnaire results

According to the analysis, the researcher will summarize the key findings from the student's questionnaire regarding their use of AI tools in academic writing, providing a clear overview of the insights gained from the analysis.

Question 1: what is your gender?

This personal, closed-ended question aims to gather demographic information on the Master Two English students' gender. There were two answers: "male" or "female." Results from the sample of 80 students indicated that 70% identified as female and 30% as male. The sample population could be described using this data and can also be used to compare any gender differences in the other questionnaire replies.

Question 2: what is your field of study?

These results show that most students specialize in Didactics and Applied Languages, indicating a significant interest in educational methodology and language teaching among the respondents. However, a minority were interested in Literature and Civilization, showcasing the diversity of academic interests among the participants.

Question 3: How familiar are you with using Artificial Intelligence in your Academic Tasks?

The majority of students (73%) showed their familiarity with using Artificial Intelligence (AI) in academic tasks, which means that students already experienced the AI tools in doing

their academic tasks; this integration of AI in education is mainly due to the spreading of AI

tools in the world. However, the remaining 27% were slightly familiar with AI technologies due

to their limited exposure, or they still preferred traditional methods.

Question 4: How interested are you in experiencing AI-based tools in your studies?

Furthermore, 81% of students showed a strong interest in incorporating AI tools into

their studies, while 19% expressed low interest, showing various degrees of excitement. This

outcome might be attributed to students believing AI technologies can benefit their studies.

Question 5: How would you rate the impact of AI tools on your learning experience, even if

the use is limited?

Moving to the impact of AI tools on learning experiences, the majority of students,

approximately 83%, perceive AI tools as having a positive impact on their learning experience

even with limited use, demonstrating the potential value that AI tools might bring to improve

learning outcomes and experiences in educational contexts.

Question 6: To what extent do you think AI could enhance your Academic performance if

more widely implemented?

The findings of this question show that most students predict the potential positive

effect of AI on their academic performance and outcomes if it is widely implemented,

showcasing that these students are already optimistic about AI's positive impact. While others

don't believe AI can enhance their learning process, these reflect varying degrees of optimism among participants.

Question 7: Do you use AI tools to elaborate your Written Assignments?

The researcher saw that most students agree that they use AI tools to elaborate on their written assignments; this indicates a confession among students of AI tools' benefits in improving their writing process. However, 21% stated that not using AI tools could represent various factors, including personal preferences, access barriers, or concerns about the reliability and effectiveness of AI tools.

Question 8: If so, can you elicit the tools?

Students showcase using various AI tools, including ChatGPT, Grammarly, QuillBot, and Perplexity. These AI tools were the most mentioned by students, and this adoption may reflect a recognition among students of the benefits that AI tools offer in enhancing their writing processes, such as grammar and spell-checking, content suggestions, and plagiarism detection.

Question 9: How often do you use AI tools in your Academic Tasks?

These results reflect varying levels of integration and reliance on AI tools among students, from occasional suggesting that students have yet to explore the benefits of AI to frequent usage that indicates that some students may not have fully integrated AI in their academic tasks. Some have recognized the potential benefits of AI tools and incorporated them into their educational assignment. It highlights the potential for AI tools to support academic tasks and the need to explore and integrate these technologies further.

Question 10: When using AI tools, do you mention it in your Assignments?

The distribution of responses suggests varying practices in acknowledging the use of AI tools in academic assignments. Some students may not mention their use of AI tools because they believe it is not necessary or because they are unsure whether it is appropriate to do so. Other students may feel that acknowledging their use of AI tools may give them an advantage over their peers, or conversely, they may fear that it could be viewed as cheating.

Question 11: How do you proceed?

The responses from students were divided into categories: those who explained how they mentioned it and those who explained why they did not mention it. Some students use AI tools without explicitly mentioning them for tasks like writing a subject for definition and further information, reformulating information, getting book recommendations, extracting main ideas, or using AI as secondary material for additional insights. They also use AI tools to correct grammar or provide more information without relying on them constantly. However, others prioritize transparency and mention using AI tools or citing references when paraphrasing answers or citations or searching for authentic sources using AI tools like Chat GPT.

Question 12: What makes it difficult for AI to be widely used?

According to the results, 32% of the students identified technological barriers as a significant challenge. These could include technical limitations. A notable 36% of students expressed concerns about some teachers' resistance to incorporating AI in their teaching methods. It may stem from a lack of awareness about AI's benefits and a fear of technology replacing human teachers. In addition, 13% of students mentioned the importance of vital infrastructure as a challenge, like the need for high-speed internet connectivity.

Furthermore, 19% of students emphasized the need for ethical use of AI. They believe that moral considerations are vital for the widespread adoption of AI, as these technologies can raise significant ethical concerns, such as privacy violations, bias, and discrimination. These results reflect the diverse challenges students perceive, including technical limitations, teacher resistance, infrastructure needs, and ethical considerations. These challenges contribute to the complexity of implementing AI technologies on a broader scale.

3.4 Teacher's interview

Table 3.1 Teacher's Interview Results

Table 3.1 Teacher's Interview Results

Questions	Responses
Q1	- 15 years - 16 years - 10 years - 6 years - 12 years - 15 years - 20 years
Q2	- yes - of course, depends on the nature of the class we are teaching - yes - yes

	- yes, indeed - yes - yes
Q3	- no - yes - no - no - yes - yes yes
Q4	- None - I generally use AI for paraphrasing the content of my lectures - / - / - In literature, I provide the plot and AI tools to help me generate stories and images that can help explain the lessons with fun. I create exercises or simply hard ones in other modules, especially for heavy subject matter. - during the COVID-19 era when we were exercising distance or e-learning. We used platforms like Moodle and video conferencing services like Google Meet and Zoom. - Grammarly
Q5	- slightly interested - interested - slightly interested - very interested - very interested - somewhat interested - interested
Q6	- We are not really trained on that. - AI helps support the process of learning. It diversifies the teaching strategies. - I read that they are not reliable and the human mind cannot be replaced - They are accommodating, practical, a perfect tool for teaching materials. Innovation and creativity - teaching is a very hard profession because it requires a lot of thinking and innovation as far as the ideas are concerned especially at the university level. AI tools reduce that overload of hard work.

	- Because the future of learning in general and learning the language in particular depends nowadays on keeping pace with the development of modern devices and new technologies. - it is very helpful
Q7	- I think it should be used appropriately and positively; otherwise, it will have a negative effect on education - I personally do not depend too much on technology and I sometimes use them just for explaining some points that require further support of chat GPT for instance. - I don't know - to the immensity of its content - If, I would rather say, wisely implemented, AI tools can facilitate both the learning and the teaching process to a great extent. - Of course, the implementation of AL does enhance the overall teaching experience. Learners can really make continuous progress in their learning. - The sources will vary, and teaching will be fruitful.
Q8	- None - lack of training (pre or Inservice training) senior teachers' motivation towards AI - I didn't try at all - verifying data and choosing the best apps are may be the two main ones - Challenges related to tools, like internet connection problems and computers. Students cannot interact with online interactive cohorts because they do not have their tools. Also, it is widely used in a bad way if I can say so, students use it to use to accomplish their assignments without even filtering the content. - A lot of challenges: lack of necessary materials, weak internet access into our university, lack of training in this new system.... - The mastery of the tools
Q9	- Lack of training for teachers and lack of necessary materials - lack of teaching materials, and weak Internet. no direct interaction with the students. - AI is used so far by students in the worst way

	- AI literacy and proficiency may be - The absence of Internet and the needed technologies - The ones stated previously - No adequate material, weak internet connection
Q10	- It depends - I consider AI as crucial since it is regarded as an essential aid for me as a teacher to develop and enhance the quality of my teaching - I am an old-fashioned teacher! I don't think technology could help me with my style of teaching and research. - it is perfect as long as it remains a facilitator tool and not the machine that replaces the human - It would be of great benefit if both teachers and students use it wisely in an interactive environment. - It can be beneficial, but it has many disadvantages. It can be considered a supportive tool in the teaching process; it allows teachers to focus on interactivity and personalized instruction and facilitates the works of a teacher to have dynamic and motivated classrooms teaching will be updated with new tools and procedures

3.5Analysis of Teacher's Interview Results

Question 1: How many years have you been teaching?

The first open-ended question was about teaching experience, and the results indicated that the teachers have a significant amount of experience in teaching. This experience level may indicate a depth of knowledge and expertise in their respective fields.

Question 2: Over these years of teaching, do you vary tools and methods of teaching?

Most teachers confirmed that they vary their teaching tools and methods, indicating a dynamic and adaptable approach to instruction. However, it is essential to note that one of the teacher's responses indicates variability depending on the class's nature. Teachers might adjust their teaching methods depending on subject matter, student demographics, or specific learning goals. Overall, it suggests that they are open to embracing new technologies and teaching methodologies, which can enhance the learning experience for students and make the teaching process more engaging and effective.

Question 3: Have you ever integrated AI-based applications into your teaching as a source?

It shows that a minority of teachers use AI-based applications in their teaching, while the majority do not. It suggests that while some teachers have welcomed AI technologies, they are not a common practice among other teachers. However, the reason behind this could vary, including factors such as lack of awareness, access to suitable resources, or preferences for traditional methods.

Question 4: If yes, could you provide examples?

The teachers' responses vary; each one provided a way to integrate AI-based applications into his teaching methodology.

Paraphrasing Content: One teacher mentioned using AI to paraphrase the content of their lectures, which can help create a straightforward explanation of complex content.

Generating Stories and Images: Another teacher uses AI tools in literature to create stories and images and add a fun and engaging element to lessons. It can help make abstract concepts more accessible to students.

Generating Exercises: The same teacher mentioned using AI to develop exercises, especially for challenging subjects. This helps them create practice materials specifically tailored to their courses' curriculum and learning objectives.

E-Learning Platforms: During COVID-19, teachers indirectly relied on AI through platforms like Moodle and video conferencing services such as Google Meet and Zoom. These platforms may incorporate AI features like automated grading, personalized learning recommendations, or virtual classroom management.

Grammarly: One teacher specifically mentioned using Grammarly, an AI-powered writing assistant. It provides real-time feedback on grammar and style, which can be beneficial for improving students' writing skills.

These examples demonstrate the diverse ways AI technologies are being leveraged in education, from content creation and enhancement to facilitating online learning experiences.

Question 5: How interested are you in incorporating more AI-based elements into your teaching?

The results show that there is a range of interest levels among teachers. Some teachers expressed a slight interest in incorporating more AI-based elements. It suggests that they may see the potential benefits but are not yet fully committed or convinced of the value of integrating AI into their teaching. There were also responses indicating a moderate level of interest, suggesting a willingness to consider AI-based elements but with some reservations or questions about implementation. Others indicated a general interest in incorporating AI-based

elements, indicating a positive outlook or openness to exploring how AI can enhance their teaching practices. A subset of teachers showed a high interest in incorporating more AI-based elements, indicating a strong desire to leverage AI technologies in their teaching to improve student learning outcomes. These varied interest levels reflect teachers' diverse perspectives and attitudes regarding integrating AI into teaching. Understanding these attitudes can inform strategies for promoting the adoption of AI-based tools and approaches in education.

Question 6: and why?

Teachers who express slight interest in incorporating AI-based elements in their teaching demonstrate the reason for lack of training or expertise in using AI technology; besides, the other teacher's response indicates doubt or concerns about the reliability of AI technology and a belief in the irreplaceability of human creativity and critical thinking in teaching. Conversely, the teachers who showed strong interest in incorporating more AI-based elements agree that AI technology enhances teaching materials, encourages innovation, and promotes creativity in the classroom. One of the remaining teachers also emphasized that teaching can be challenging as it requires high-level thinking and innovation, especially in higher education. This insight highlights the potential of AI to assist teachers in creative problem-solving tasks, thus allowing them to focus more on other tasks. Furthermore, the other teacher admits that the future of education, especially in areas like language learning, is intertwined with technological advancements. The teacher confirms the need for educators to embrace new technologies to enhance teaching effectiveness and student engagement.

Question 7: To what extent could AI enhance the overall teaching experience if more widely implemented?

Four responses highlight various perspectives on the potential benefits of AI in enhancing the teaching experience when implemented thoughtfully and responsibly. They emphasize the possibility of positively impacting students' learning outcomes. Also, they suggest that AI's ability to provide diverse sources and resources can lead to more fruitful teaching experiences. In contrast, a teacher indicates a moderate reliance on technology; he said he uses AI tools like Chat GPT for specific purposes, such as explaining complex points. It suggests a selective use of AI-based on its utility in enhancing teaching effectiveness. Another teacher's response proposes that AI's effectiveness in education is linked to the quality and diversity of available AI-based resources and tools.

Question 8: What challenges have you faced in trying to integrate AI into your instructional practices?

Some teachers highlighted challenges related to a lack of pre-service and in-service training, which could hinder their ability to integrate AI into teaching effectively. Others highlight challenges such as technical infrastructure, weak internet access, and the need for necessary materials like computers, particularly at Belhadj Bouchaib University. They also expressed concerns about students misusing AI tools, such as using them to complete assignments without engaging with the content or using inappropriate content.

Question 9: Are there specific obstacles or concerns that hinder the broader adoption of AI in teaching?

The Results show various obstacles that hinder the implementation of AI in teaching. Therefore, teachers highlighted these main points:

- need for training in AI technologies

- weak internet connection

- absence of adequate teaching materials

- inappropriate use of AI among students

- The level of AI literacy and proficiency

These responses highlight common concerns such as training needs, infrastructure limitations, student behavior, and the overall readiness of teachers and students to utilize AI in teaching effectively. Addressing these obstacles is essential for promoting the broader adoption of AI technologies in education.

Question 10: How do you perceive the impact of AI on your teaching, even if the use is limited?

Based on the responses to the tenth question, here are the perceptions expressed by the interviewed teachers:

_The first response indicates a flexible perception of the impact of AI, suggesting that the effectiveness or benefit of AI in teaching may depend on specific circumstances or contexts.

_The second one reflects a positive perception of AI as a crucial tool for improving teaching quality and effectiveness, emphasizing its role as an aid to teachers.

_The third response expresses a more resistant view towards AI and technology in general, indicating a preference for traditional teaching methods and a belief that technology may not align with their teaching style.

_Other teachers' responses suggest a balanced perspective, recognizing the benefits of AI as a facilitator tool while highlighting the importance of keeping humans involved and overseeing the teaching process.

_This response emphasizes the potential benefits of AI in fostering interactive learning environments when teachers and students use it wisely.

_Another teacher's response acknowledges both the benefits and disadvantages of AI in teaching, highlighting its role as a supportive tool enabling interactivity, personalized instruction, and dynamic classrooms.

_The final one reflects a forward-looking perspective, suggesting that AI can contribute to updating teaching methods and procedures to align with technological advancements.

The opinions on the role of AI in education are varied and reflect a nuanced understanding of its potential impact. Some teachers recognize that AI's effectiveness varies depending on the context and emphasize its context-dependent nature. Others see it as a crucial tool for improving teaching quality and aiding educators. Meanwhile, some prefer

traditional teaching methods and highlight the importance of aligning technology with individual teaching styles. However, all these viewpoints agree that AI has the potential to enhance interactive learning environments, facilitate personalized instruction, and update teaching methods to align with technological advancements. At the same time, everyone acknowledges the need for human oversight and involvement in the teaching process.

3.6 Conclusion

This chapter represents the analysis of the questionnaire and interview results. The results obtained from the questionnaire analysis shed light on how university students of Belhadj Bouchaib perceive and approach AI tools in education, answering the first question. While they show that AI tools impact students differently, that is to say, and AI tools do not enhance learning in the same way for everyone, disproving the first hypothesis. However, the analysis also showed challenges that may cause Artificial Intelligence to be widely incorporated in universities. Additionally, these results provide an overview of the insights collected from the teacher's interviews. Indeed, they answer the second question, providing an overall understanding of the complexities and considerations associated with implementing AI in Algerian Higher Education in Ain Temouchent, proving the second hypothesis. Moreover, this chapter also outlines the study's limitations encountered by the researcher during his journey, followed by recommendations about the challenges and obstacles that should be reviewed to enhance the opportunity to keep up with the Artificial intelligence revolution.

GENERAL CONCLUSION

General conclusion

Artificial intelligence has revolutionized everything in our world, including the educational sector. The Algerian Ministry of Higher Education and Scientific Research has focused on implementing AI in higher education. This indicates that higher education has a significant role in Algeria's industry. However, this research aims to explore the impact of artificial intelligence on student learning experience and outcomes, teachers' pedagogical practices, and challenges in Algerian higher education, specifically at the University of Ain Temouchent « Belhadj Bouchaib ».

To achieve our goal, the research included three main chapters. The theoretical chapter focused on developing a solid theoretical background, which served as the fundamental framework for the rest of the research. Additionally, the practical chapter outlines the methodology used to study AI tools in academic tasks. It covers the sample population, research instruments, validity, and reliability. Furthermore, the final chapter incorporates the data analysis and the discussion of the findings, followed by the limitations encountered and some recommendations.

This research shows that many students recognize the potential impact of AI tools on their learning experiences, with many expressing interests in using AI-based tools and acknowledging their positive impact. However, the impact of AI tools on students varies, thus disproving the initial hypothesis that they enhance learning in the same way for everyone. Moreover, the teacher's interview results emphasized the potential benefits of AI on teaching methodology and student learning outcomes. Challenges like the need for training proved the second hypothesis, the need for adequate training and technological infrastructure that arise

with implementing artificial intelligence, which should be reviewed by policymakers in order to improve educational quality and meet global standards. Besides, some opportunities arise from incorporating AI in higher Algerian education. Firstly, AI can be a flexible tool that can adapt to specific teaching circumstances and contexts, potentially enhancing its effectiveness. Secondly, AI has the potential to positively impact the quality of teaching by acting as a valuable aid to educators and supporting them in delivering better learning experiences. Some limitations must be acknowledged. First, the study's scope was limited to the English department, highlighting the need for future studies to explore the effectiveness of implementing AI tools across different fields within Algerian higher education. Second, time constraints significantly impacted the depth of insights obtained, indicating a potential for more comprehensive research with extended timelines. Third, inability to synchronize time between the researcher and the professor due to time constraints led the researcher to do the interview online. Finally, Lack of responses in student's questionnaires has led to a shortage of opinions. These limitations emphasize the importance of expanding the research focus and allowing sufficient time for thorough investigation in future studies.

According to the student questionnaire or the teacher's interview findings, the researcher found that challenges hinder the implementation of Artificial Intelligence in Higher Algerian education, specifically at the University of Ain Temouchent. As a result, the researcher recommends supporting the university with more adequate materials, a need for improvement in technological infrastructure (weak Internet, modern software, electronic devices), and they need to offer training courses for teachers and students to improve their skills and learn how to use artificial intelligence tools responsibly and in a good way.

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The Appendices

The Appendices

Appendix 1

Student's Questionnaire:

Assessing AI Use and Challenges in Algerian Universities

Q1: Your gender?

    a) Female

    b) Male

Q2: Field of study

    a) Didactics and Applied Languages

    b) Literature and Civilization

Q3: How familiar are you with using Artificial Intelligence in your Academic Tasks?

    a) Not at all

    b) Slightly

    c) Somewhat

    d) Very

    e) Extremely

Q4: How interested are you in experiencing AI-based tools in your studies?

    a) Not interested

    b) Slightly interested

    c) Somewhat

    d) Interested

    e) Very interested

Q5: How would you rate the impact of AI tools on your learning experience, even if the use is limited?

    a) No impact

    b) low impact

    c) Moderate impact

    d) High impact

    e) Very high impact

Q6: To what extent do you think AI could enhance your Academic performance if more widely implemented?

    a) Not at all

    b) Slightly

    c) Somewhat

    d) Very

    e) Extremely

Q7: Do you use AI tools to elaborate your Written Assignments?

    a) Yes

    b) No

Q8: Elicit the tools

• •

Q9: How often do you use AI tools in your Academic Tasks?

    a) Never

b) Rarely

c) Sometimes

d) Often

e) Always

Q10: When using AI tools, do you mention it in your Assignments?

a) Yes

b) No

Q11: How do you proceed?

•••

Q12: What makes it difficult for AI to be widely used?

a) Technological Barriers

b) Some Teachers may resist using AI in their Teaching Methods

c) Necessity for a vital infrastructure

d) Ensuring Ethical use

Appendix 2

Interview Questions:

Teacher Perspectives on AI in Education

Q1: How many years have you been teaching?

•••

Q2: Over these years of teaching, do you vary tools and methods of teaching?

•••

Q3: Have you ever integrated AI-based applications into your teaching as a source?

    a) Yes

    b) No

Q4: If yes, could you provide examples?

•••

Q5: How interested are you in incorporating more AI-based elements into your teaching?

    a) Not interested

    b) Slightly interested

    c) Somewhat interested

    d) Interested

    e) Very interested

Q6: and why?

⋯⋯⋯

Q7: To what extent could AI enhance the overall teaching experience if more widely

implemented?

⋯⋯⋯

Q8: What challenges have you faced in trying to integrate AI into your instructional practices?

⋯⋯⋯

Q9: Are there specific obstacles or concerns that hinder the broader adoption of AI in teaching?

⋯⋯⋯

Q10: How do you perceive the impact of AI on your teaching, even if the use is limited?

⋯⋯⋯

ملخص:

يستكشف هذا البحث تأثير الذكاء الاصطناعي على تعلم الطلاب والممارسات التربوية والتحديات في التعليم العالي الجزائري، وتحديدا في جامعة عين تموشنت (بلحاج بوشعيب). ومع ارتفاع استخدام الذكاء الاصطناعي بين الطلاب، ظهرت مخاوف المعلمين بشأن الاعتماد المفرط على هذه الأدوات، مما أثار تساؤلات حول تأثيرها المحتمل على مهارات التفكير النقدي والاستقلالية، والتي تعتبر حاسمة لنجاح الطلاب الأكاديمي والوظيفي. تحاول هذه الدراسة تحديد مدى مساهمة تطبيقات الذكاء الاصطناعي في النتائج الأكاديمية للمتعلمين. طرح الباحث سؤالين بحثيين مركزيين: إلى أي مدى يمكن للتطبيقات الذكاء الاصطناعي تحسين مشاركة الطلاب ونتائج التعلم في التعليم العالي الجزائري، وما هي التحديات والفرص المرتبطة بتنفيذ الذكاء الاصطناعي في التعليم العالي الجزائري في عين تموشنت. تقدم الدراسة فرضيتين مفادها أن دمج تطبيقات الذكاء الاصطناعي في التعليم العالي الجزائري يعزز بشكل كبير مشاركة الطلاب ويحسن نتائج التعلم، ويطرح تنفيذ الذكاء الاصطناعي في التعليم العالي الجزائري في عين تموشنت تحديات وفرصا كبيرة، مما يساهم في تعزيز جودة التعليم وتلبية المعايير العالمية. يستخدم هذا التحقيق نهجا مختلط الأساليب. بما في ذلك استبيان ل 80 طالب ماجستير 2، ومقابلات مع سبعة معلمين لجمع البيانات. تشير النتائج إلى أنه في حين أن أدوات الذكاء الاصطناعي يمكن أن تعزز خبرات تعلم الطلاب ونتائجهم وتحسن طرق التدريس، إلا أن هناك تحديات مثل نقص التدريب وفجوات البنية التحتية، حيث أعرب بعض المعلمين عن معارضتهم للتكنولوجيا الذكاء الاصطناعي لصالح الأساليب التقليدية.

Resumé :

Cette recherche explore l'impact de l'intelligence artificielle sur l'apprentissage et les pratiques pédagogiques des étudiants dans l'enseignement supérieur algérien, en particulier à l'Université Ain Temouchent (Belhadj Bouchaib). Alors que l'utilisation de l'IA chez les étudiants augmente, les préoccupations des enseignants au sujet de la dépendance excessive à ces outils ont fait surface, soulevant des questions sur leur impact potentiel sur les compétences de pensée critique et l'indépendance, qui sont cruciales pour la réussite scolaire et professionnelle des élèves. Cette étude tente de déterminer dans quelle mesure les applications d'IA peuvent contribuer aux résultats academiques des apprenants. Le chercheur a posé deux questions de recherche : dans quelle mesure les applications d'IA peuvent améliorer l'engagement et les résultats d'apprentissage des etudiants et quels sont les défis et opportunités associés à la mise en œuvre de l'IA dans l'enseignement supérieur Algérien. Une étude de cas a été réalisée avec des étudiants de Master 2 des deux spécialités (didactique et langues appliquées / littérature) au Département des lettres et de la langue anglaise. L'étude propose deux hypothèses : l'intégration des applications de l'IA dans l'enseignement supérieur Algérien améliore considérablement l'engagement des étudiants et les résultats d'apprentissage, et la mise en œuvre de l'IA dans l'enseignement supérieur algérien à Ain Temouchent présente des défis et des opportunités importants. Une approche mixte a été adoptée, incluant un questionnaire adressé aux étudiants de Master 2, et un entretien structuré avec sept enseignants. Les résultats indiquent que, bien que les outils d'IA puissent améliorer les expériences et les

résultats d'apprentissage des étudiants et améliorer les méthodes d'enseignement, des défis tels que le manque de formation et les lacunes d'infrastructure existent, certains enseignants exprimant une résistance à la technologie d'IA en faveur des méthodes traditionnelles.