

PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA

Ministry of Higher Education and Scientific Research

University of Ain Temouchent - Belhadj Bouchaib

Faculty of Letters, Languages and Social Sciences

Department of Letters and English Language



**The role of Artificial Intelligence in enhancing
learning outcomes of Masters' level students:**

A case study in higher education

An Extended Essay Submitted in Partial Fulfillment of the Requirement for a

Master's Degree in Didactics and Applied Languages

Submitted by:

- ❖ **Chabane Wiame**
- ❖ **Ouggad Khadidja Soraya**

Supervised by:

Dr.DEKHIL Anfal Khadidja

Board of Examiners

President: Dr.Belhamidi Salma
Supervisor: Dr.Dekhil Anfal Khadidja
Examiner: Dr.Elouali Fatima Zohra

Ain Temouchent University
Ain Temouchent University
Ain Temouchent University

Academic Year: 2023/2024

Dedications

We dedicate this work to our parents, who have showered us with love and sacrifice during all these years of study. We can never thank them enough for this.

To all our brothers and friends who have always believed in us, pushed us to show the best of ourselves, and with whom we will keep the best memories.

Acknowledgments

We would like to express our gratitude to Almighty Allah, who gave us the strength and courage to complete this work.

With deep gratitude and sincerity, we would like to extend our heartfelt thanks to our supervisor, Mrs. DEKHIL Anfal, for her invaluable guidance throughout the development of this project, and especially for her support throughout our work.

We would also like to thank all the teachers who contributed to our education, as well as our classmates who shared their diverse experiences with us.

A special thanks to our parents and our entire families, who have helped us pursue our studies in the best possible conditions and have always supported and encouraged us without limits..

Abstract:

This study delves into the integration of artificial intelligence in higher education, focusing on the perspectives of students and EFL teachers at Belhadj Bouchaib University in Algeria. Utilizing two distinct questionnaires tailored for students and teachers, as conducting an insightful interview with an English as a Foreign Language teacher at the National School of Artificial Intelligence in Algiers, the research aims to comprehensively explore the role of artificial intelligence integration in higher education and how it enhances the teaching and learning practices. By gathering quantitative and qualitative data, this study seeks to uncover valuable insights into the adoption, challenges, and potential benefits of AI in the educational landscape, ultimately contributing to the enhancement of teaching methodologies and student outcomes.

Keywords: Artificial intelligence, higher education, students, teachers, perspectives, integration, pedagogy.

ملخص:

تتناول هذه الدراسة دمج الذكاء الاصطناعي في التعليم العالي، مع التركيز على وجهات نظر الطلاب ومدرسي اللغة الإنجليزية كلغة أجنبية في جامعة بلحاج بوشعيب في الجزائر. باستخدام استبيانين مختلفين تم تصميمهما خصيصًا للطلاب والمعلمين، بالإضافة إلى إجراء مقابلة مفيدة مع مدرس لغة إنجليزية كلغة أجنبية في المدرسة الوطنية للذكاء الاصطناعي في الجزائر، تهدف هذه البحث إلى استكشاف دور دمج الذكاء الاصطناعي في التعليم العالي وكيف يعزز ممارسات التدريس والتعلم. من خلال جمع البيانات الكمية والنوعية، تسعى هذه الدراسة للكشف عن رؤى قيمة حول التبنى والتحديات والفوائد المحتملة للذكاء الاصطناعي في المشهد التعليمي، مما يساهم في تحسين أساليب التدريس ونتائج الطلاب

الكلمات الرئيسية: الذكاء الاصطناعي، التعليم العالي، الطلاب، المعلمين، وجهات النظر، الدمج،

البيداغوجيا

Table of Contents

| | |
|---|----|
| <i>Dedications</i> | II |
| Abstract: | IV |
| General introduction | 1 |
| <i>Chapter 1: Introduction and Background of the Study</i> | 3 |
| 1.1. Introduction | 3 |
| 1.2. Evolution of Technology in Education | 3 |
| 1.2.1. Historical Perspective of Technological Advancements in Education | 3 |
| 1.2.2. Recent Trends and Their Impact on Educational Practices | 4 |
| 1.3. Evolution of Artificial Intelligence (AI) in education | 6 |
| 1.3.1. Historical Perspective of AI in Education | 6 |
| 1.3.2. Recent Trends and Technological Advances in AI for Educational Purposes | 7 |
| 1.4. Impacts of AI in Higher Education | 8 |
| 1.4.1. Enhancement of Educational Processes Through AI | 9 |
| 1.4.2. Changes in Pedagogical Methods Facilitated by AI | 10 |
| 1.4.3. Consequences of AI Implementation on Student Learning | 11 |
| 1.5. Previous Studies on AI in Higher Education | 12 |
| 1.5.1. Synthesis of existing works | 13 |
| 1.5.2. Identifying gaps and shortcomings in the literature | 16 |
| 1.6. The use of AI in Algeria | 18 |
| 1.6.1. General Use of AI in Algeria | 18 |
| 1.6.2. The Use of AI in Higher Education in Algeria | 19 |

| | | |
|--|---|----|
| 1.6.3. | Challenges and Opportunities | 20 |
| 1.7. | Conclusion | 21 |
| <i>Chapter 2: Research Methodology</i> | | 23 |
| 2.1 | Introduction | 23 |
| 2.2 | Choice of the topic | 23 |
| 2.2.1 | Contextualization of the Topic | 24 |
| 2.3 | Research Approaches | 25 |
| 2.3.1 | Justification of the Study | 25 |
| 2.3.2 | Identification of Research Objectives: | 26 |
| 2.4 | Research Questions | 26 |
| 2.5 | Research Hypotheses | 27 |
| 2.5.1 | Main Hypothesis: | 27 |
| 2.5.2 | Subsidiary Hypotheses: | 27 |
| 2.6 | Research Sample | 27 |
| 2.6.1 | Selection of Participants | 27 |
| 2.6.2 | Inclusion/Exclusion Criteria | 28 |
| 2.7 | Research Method | 28 |
| 2.7.1 | Qualitative/Quantitative Approach | 28 |
| 2.7.2 | Research tools | 30 |
| 2.7.3 | Validation of Tools | 31 |
| 2.8 | Research Context | 31 |
| 2.8.1 | Location and Period of the Study | 31 |

| | | |
|---|---|----|
| 2.8.2 | Justification of the Chosen Context..... | 32 |
| 2.8.3 | Justification of the chosen period..... | 32 |
| <i>Chapter 3: Data Analysis</i> | | 34 |
| 3.1. | Introduction | 34 |
| 3.2.1. | Analysis of Responses..... | 34 |
| 3.2.2. | Discussion of Results | 45 |
| 3.3. | Students' Questionnaire Results | 46 |
| 3.3.1. | Analysis of Responses..... | 46 |
| 3.4. | Teacher's Interview Results | 58 |
| 3.4.1. | Analysis of the Responses | 58 |
| 3.4.2. | Discussion of Results | 61 |
| <i>Chapter 4: Findings Discussion</i> | | 63 |
| 4.1. | Introduction | 63 |
| 4.2. | Comparison with Existing Literature | 63 |
| 4.2.1. | Comparison of results with previous studies | 63 |
| 4.2.2. | Identification of convergences and divergences..... | 70 |
| 4.3. | Implications for Higher Education | 71 |
| 4.3.1. | Practical applications of the results | 71 |
| 4.3.2. | Recommendations for educational institutions..... | 73 |
| 4.4. | Limitations of the Study..... | 74 |
| 4.4.1. | Factors potentially affecting result validity..... | 74 |
| 4.4.2. | Suggestions for future research..... | 75 |

| | |
|----------------------------------|----|
| 4.5. Conclusion | 76 |
| General conclusion: | 77 |
| Bibliography | 79 |

General Introduction

Understanding this transformant potential of AI for improving learning outcomes at the Master's level, in higher education, calls for in-depth research. The following dissertation has been designed to address this research need based on a detailed study of the historical, practical, and analytical aspects of artificial intelligence integration in education.

Indeed, technology has significantly transformed the way in which education is imparted. The educational arena, transformed immensely from the pre-renaissance period, the conception of printing machines, to the present day, widely digital, and connected landscape. This dissertation opens with an insight into the history of educational technology, which explains in detail the perspective of technological growth and innovations in this field and how they have influenced the teaching and learning processes. In this historical context, the journey of AI development in education is also analyzed from its inception to its present-day applications. This becomes essential to understand the intricate involvement between the growth of technology and its impact on the educational landscape. This research was directed to Master 1 teachers and students from Belhadj Bouchaib University of Ain Temouchent, Algeria. Additionally, one professor from an AI school in Algiers. How can the integration of AI enhance teaching methodologies and student learning outcomes? and To what extent does AI contribute to revolutionizing education? These are the main two critical questions that the study seeks to answer and this will help to frame the scope and the direction of this dissertation. In addition, two main hypotheses are proposed to address the research problem effectively and by this the study suggests that The integration of AI enhances the effectiveness of teaching methodologies, leading to improved student learning outcomes. and

that AI significantly contributes to the transformation and innovation of educational practices, leading to a revolution in education. These hypotheses are essential as they guide the investigation of the study and provide a basis for the analysis.

Subsequently as we delve into the core of the study it is essential to know the aims that have guided this research in which it seeks to explore the transformative potential of AI in the realm of education particularly in higher education and by this our this the overarching aims was to examine the impact of AI integration on the learning experiences of master one students, to evaluate the role of AI in enhancing administrative efficiency within higher education institutions and finally to investigate how AI tool can promote equity and inclusion among master one students cohorts.

Then the research is followed by a detailed examination of the specific role of AI in higher education, drawing on what has gone before. Higher education is no exception and has embraced AI as an emerging technology with transformational power over the traditional ways of teaching, facilitating more enhanced learning experiences and reducing administrative work. The understanding of the implications of this AI integration in higher education is achieved by studying the current applications of AI, the emerging trends, and best practices for this implementation. The practical insights on how AI can really be integrated in practical situations to gain the maximum of its usefulness will also be generated through real-life examples and case studies. Equally, the challenges and barriers to AI implementation will be outlined, and strategies for how these can be surmounted will be proposed.

The dissertation further elaborates on the findings, expounding on the information gathered from the different instruments used in the research. Structured questionnaires with professors and Master 1 students and semi-structured interviews with an EFL professor provided insights into the integration of AI in higher education. The use of the information to draw a comprehensive scenario presents the perspectives of both educators and students concerning

AI's general effects on the teaching, learning, and educational practices at the particular institution.

Finally, the study's findings are discussed in relation to existing literature, highlighting both convergences and divergences. The implications for higher education, practical applications of the results, and recommendations for educational institutions are explored. The limitations of the study, issues that threaten the validity of the findings, and suggestions for further research are also taken care of herein.

In summary, this dissertation goes into the details necessary for a better understanding of how AI helps foster positive learning outcomes at the Master's level in higher education. In this way, historical background, the contemporary use, and the practical implications of adopting AI in this specific sector are covered with the aim of making this study the best method of understanding the way AI can drive innovation and positive change in the educational settings.

Chapter 1: Literature Review

Chapter 1: Introduction and Background of the Study

1.1. Introduction

The educational landscape has undergone profound transformations propelled by the relentless march of technology. This chapter delves into the historical evolution and recent trends in technological advancements within education. From the humble origins of printing presses to the integration of computers, a comprehensive historical perspective unfolds. Recent trends, marked by digitalization and connectivity, are scrutinized for their impact on modern educational practices. Simultaneously, the chapter explores the parallel narrative of Artificial Intelligence (AI) in education. The historical journey of AI in education is unveiled, chronicling its growth from early experiments to contemporary applications. As technology continues to shape education, this chapter seeks to unravel the intricate interplay between technological evolution and its profound impact on teaching and learning.

1.2. Evolution of Technology in Education

The evolution of technology in education has undergone a transformative journey, reshaped traditional teaching and learning methods. From historical advancements such as audio-visual aids to the present era of Artificial Intelligence, each phase has contributed to expanding access and fostering interactive learning experiences.

1.2.1. Historical Perspective of Technological Advancements in Education

The historical evolution of technology in education is a fascinating journey marked by transformative milestones. In ancient times, education relied heavily on oral communication and handwritten manuscripts, limiting the dissemination of knowledge to a select few. The advent of the printing press in the 15th century revolutionized this landscape, making information more accessible and affordable (Salavati, S, 2016).

Chapter 1: Literature Review

Moreover, as centuries progressed, educational technology witnessed the integration of audio-visual aids in the early 20th century. Projectors, slides, and films became instrumental in enhancing teaching methods, bringing visual elements into the educational realm. This period marked a significant shift in how educators approached conveying information to students.

Additionally, the mid-20th century introduced computers to schools, laying the groundwork for the digital era. The emergence of personal computers in the late 20th century further transformed educational practices. Textbooks started to share shelf space with CD-ROMs, and computer labs became essential components of educational institutions (Shabiralyani, G., Hasan, K. S., Hamad, N., & Iqbal, N., 2015).

Furthermore, with the advent of the internet in the late 20th century, a new chapter in educational technology unfolded. Online resources, e-learning platforms, and virtual classrooms emerged, transcending geographical barriers. The 21st century witnessed the proliferation of mobile devices, interactive whiteboards, and educational software, fostering a more dynamic and interactive learning environment (Capacity, T, 2021).

Additionally, recent decades have seen the rise of blended learning, combining traditional methods with digital tools. Augmented and virtual reality technologies have opened up new possibilities for immersive learning experiences. The historical perspective of technological advancements in education reflects a continual journey of innovation, where each era builds upon the foundations of the past, shaping the present and future of education..

1.2.2. Recent Trends and Their Impact on Educational Practices

First and foremost, the educational landscape has undergone a paradigm shift in recent years, driven by a wave of technological trends that have reshaped traditional teaching approaches. The advent of widespread internet connectivity has propelled the rise of online

Chapter 1: Literature Review

learning platforms, enabling access to educational resources from virtually anywhere in the world.

Following this, mobile devices have become ubiquitous, leading to a surge in mobile learning initiatives. Students can now engage with educational content on smartphones and tablets, fostering a more flexible and personalized learning experience. Interactive whiteboards have replaced traditional chalkboards, enhancing classroom engagement and promoting collaborative learning environments (Suk, J., 2024).

Moreover, blended learning, the seamless integration of traditional face-to-face instruction with digital resources, has gained prominence. This approach allows educators to leverage the benefits of both conventional teaching methods and modern technology, catering to diverse learning styles (Moral, R. V., Ycong, S. T., & Misa, G. O, 2023).

Subsequently, the utilization of educational software and applications has become integral to the learning experience. Gamification and adaptive learning platforms offer interactive and tailored content, making the educational journey more engaging and effective. Virtual and augmented reality technologies have added a new dimension to learning, providing immersive experiences that enhance understanding and retention (Mohanty, A., Alam, A., Sarkar, R., & Chaudhury, S, 2021).

Finally, the recent emphasis on data-driven decision-making in education has led to the development of learning analytics tools. These tools enable educators to gather insights into student performance, tailor instructional strategies, and provide targeted support, fostering a more individualized approach to learning (Hymel, N, 2023).

To conclude, recent trends in educational technology have not only expanded access to education but have also transformed the way educators teach and students learn. The impact

Chapter 1: Literature Review

of these trends is profound, paving the way for a more dynamic, inclusive, and technologically integrated educational landscape.

1.3. Evolution of Artificial Intelligence (AI) in education

The historical evolution of Artificial Intelligence (AI) in education showcases a transformative journey, highlighting the fusion of technological innovation and educational theory to shape AI into a powerful tool for personalized and adaptive learning experiences.

1.3.1. Historical Perspective of AI in Education

In the historical journey of artificial intelligence (AI) in education, the evolving intersection of technology and pedagogy becomes evident. While the concept of AI dates back to ancient times in philosophical and mythical discussions, its practical application in education began to take shape in the mid-20th century.

Moving forward to the 1950s and 1960s, early AI pioneers explored the potential of computer programs to simulate human intelligence. The idea of creating intelligent machines that could assist in educational tasks gained traction. However, the technological limitations of that era constrained the practical implementation of these concepts.

Subsequently, during the 1970s and 1980s, the focus shifted to expert systems and knowledge-based systems in education. These AI applications aimed to provide personalized tutoring and support based on individual student needs. While the implementations were rudimentary compared to contemporary standards, they laid the groundwork for future developments.

Moreover, the 1990s saw the integration of AI into educational software and intelligent tutoring systems. These systems utilized algorithms to adapt to individual learning styles, offering tailored feedback and guidance. Despite advancements, challenges such as limited computing power and access to technology hindered widespread adoption.

Chapter 1: Literature Review

Entering the 21st century, renewed interest and rapid advancements in AI were catalyzed by increased computational capabilities and access to vast datasets. Intelligent virtual assistants, automated grading systems, and adaptive learning platforms became prevalent. Machine learning algorithms enabled the analysis of student data to identify patterns and provide insights for personalized instruction (Roll, I., Wylie, R., 2016).

In summary, the historical perspective of AI in education reflects a gradual evolution from theoretical concepts to practical applications. As technology continues to advance, the integration of AI holds the promise of revolutionizing educational experiences, offering personalized and adaptive learning opportunities for students worldwide.

1.3.2. Recent Trends and Technological Advances in AI for Educational Purposes

In recent years, artificial intelligence (AI) has experienced a surge in relevance and application within the field of education, transforming how students learn and educators teach. Several notable trends and technological advances have shaped the landscape of AI in education.

- **Adaptive Learning Systems:** AI-driven adaptive learning platforms have gained prominence, offering personalized learning experiences tailored to individual student needs. These systems use algorithms to analyze student performance and adjust content delivery, pacing, and difficulty in real-time, optimizing the learning process.
- **Intelligent Tutoring Systems:** Modern AI technologies have given rise to intelligent tutoring systems that go beyond static educational software. These systems leverage machine learning to understand student behaviors, adapt instructional strategies, and provide targeted feedback, mimicking the personalized support of a human tutor.
- **Natural Language Processing (NLP):** NLP has become a key component of AI in education, enabling machines to understand and respond to human language. This

Chapter 1: Literature Review

technology is applied in chatbots, virtual assistants, and language learning platforms, facilitating interactive and conversational learning experiences.

- **Gamification and Immersive Learning:** AI is increasingly being utilized to enhance gamification elements in education, making learning more engaging and interactive. Virtual and augmented reality technologies have also gained traction, offering immersive learning experiences that simulate real-world scenarios.
- **Data Analytics and Learning Analytics:** The collection and analysis of data on student performance have become integral to educational practices. AI-driven data analytics and learning analytics tools help educators gain insights into student progress, identify areas for improvement, and make data-informed decisions to enhance teaching methodologies.
- **Ethical AI and Inclusivity:** Recent trends emphasize the importance of ethical considerations in AI for education. Ensuring fairness, transparency, and inclusivity in AI algorithms is crucial to avoid perpetuating biases and to provide equitable learning opportunities for all students (Suk, J. , 2024).

As AI in education continues to advance, these trends reflect a dynamic landscape where technology is harnessed to create more personalized, interactive, and inclusive learning environments, ultimately shaping the future of education.

1.4.Impacts of AI in Higher Education

The evolution of Artificial Intelligence (AI) in education has been marked by significant milestones, representing a continuous integration of cutting-edge technology to enhance and revolutionize educational processes. From early attempts to incorporate AI in educational settings to the current sophisticated applications, the journey reflects a dynamic intersection of technological advancements and pedagogical aspirations.

Chapter 1: Literature Review

1.4.1. Enhancement of Educational Processes Through AI

Artificial Intelligence (AI) has become a transformative force in education, reshaping how learning is approached and enhancing various aspects of the educational journey. Its integration brings forth a myriad of advancements that collectively contribute to a more efficient, personalized, and engaging learning experience. One significant impact is seen in personalized learning, where AI facilitates the creation of adaptive platforms tailoring educational content to the unique needs of individual students. These platforms utilize machine learning algorithms to analyze student performance, identify strengths and weaknesses, and dynamically adjust the curriculum in real-time, providing a personalized learning path (Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... Wright, R., 2023).

Furthermore, AI optimizes content delivery by assessing the most effective ways to present information, considering individual learning styles. This efficiency extends to assessment processes through automated grading systems, reducing the workload for educators and offering prompt, detailed feedback to students, fostering a quicker and more iterative learning cycle. Predictive analytics, another AI-driven application, enables educators to anticipate student performance trends based on historical data, allowing for proactive interventions to support struggling students and prevent learning gaps (Owan, V. J., Abang, K., Idika, D. O., & Bassey, B. A., 2023).

Moreover, in the realm of technology-enabled education, AI contributes to the development of smart classrooms equipped with interactive whiteboards, virtual assistants, and educational chatbots. These technologies facilitate real-time interaction, answer queries, and assist both students and teachers in various tasks, creating a more dynamic and engaging learning environment. Additionally, AI algorithms analyze extensive datasets to understand

Chapter 1: Literature Review

the effectiveness of different teaching methods, helping educators tailor instruction to meet the diverse learning needs of students. This ensures that each individual receives a customized and effective educational experience (Zarris, D., & Sozos, S., 2023).

The integration of AI in education signifies a paradigm shift, leveraging technology to optimize educational processes, improve outcomes, and provide a more adaptive and student-centric approach to learning. As AI continues to evolve, its role in enhancing educational processes is poised to expand further, contributing to a more innovative and inclusive education system (Kamalov, F., Santandreu Calonge, D., & Gurrib, I., 2023).

1.4.2. Changes in Pedagogical Methods Facilitated by AI

The infusion of Artificial Intelligence (AI) into education marks a transformative shift in pedagogical methods, fundamentally altering how educators teach and students engage with learning. This integration enables innovative instructional strategies that adapt to individual learning styles, fostering a more inclusive and effective pedagogical environment.

Firstly, one key impact is seen in personalized learning experiences, where AI facilitates the creation of tailored educational paths, accommodating the unique needs and pace of each student. This departure from traditional approaches allows educators to address individual strengths and weaknesses, creating a more inclusive learning environment. Adaptive assessment and feedback tools driven by AI adjust question difficulty based on student performance, providing accurate evaluations and immediate feedback, supporting a more iterative learning process.

Furthermore, AI also enhances collaborative learning through intelligent platforms that facilitate group projects and discussions. Leveraging algorithms to match students with complementary skills and learning preferences promotes effective teamwork and knowledge exchange. The incorporation of immersive technologies, such as virtual and augmented

Chapter 1: Literature Review

reality, into pedagogical methods is another facet of AI's contribution. These technologies create interactive and engaging learning experiences, allowing students to explore complex concepts more tangibly.

Lastly, AI-driven analytics provide educators with insights into student progress, preferences, and challenges, enabling data-informed decision-making. Automation of routine administrative tasks by AI allows educators to focus more on personalized instruction and mentoring, reducing the burden of administrative work and fostering meaningful interactions with students (GGI Insights, 2023).

In conclusion, the evolution of pedagogical methods facilitated by AI signifies a dynamic shift towards student-centered, adaptive, and data-driven approaches. As educators embrace these changes, AI becomes a valuable ally in creating a more responsive and inclusive educational experience, preparing students for future challenges.

1.4.3. Consequences of AI Implementation on Student Learning

The implementation of Artificial Intelligence (AI) in education has far-reaching consequences on student learning, influencing various aspects of the educational experience. As AI technologies become integral to the learning environment, both positive and challenging consequences emerge, shaping the dynamics between students, educators, and the educational process (Tsai, C.-C., Cheng, Y.-M., Tsai, Y.-S., & Lou, S.-J., 2023).

- **Positive Impact on Personalization:** AI facilitates personalized learning experiences by tailoring content and pacing to individual student needs. This adaptability ensures that students receive targeted instruction, addressing their strengths and weaknesses, and fostering a more customized educational journey.
- **Enhanced Engagement and Motivation:** Interactive AI-driven educational tools, gamification elements, and immersive technologies contribute to heightened

Chapter 1: Literature Review

engagement and motivation among students. The dynamic and interactive nature of these learning experiences makes the educational process more enjoyable and impactful.

- **Efficient Assessment and Feedback:** AI streamlines assessment processes, providing automated grading and immediate feedback. This not only reduces the workload for educators but also offers students timely insights into their performance, allowing for continuous improvement and a more iterative learning cycle.
- **Challenges in Ethical Considerations:** The use of AI raises ethical considerations regarding data privacy, algorithmic bias, and the potential impact on socio-economic disparities. Ensuring ethical AI implementation is crucial to mitigate unintended consequences and maintain fairness and equity in educational practices.
- **Preparation for Future Skills:** AI implementation prepares students for the demands of the future workforce by exposing them to technology-driven learning environments. This helps cultivate skills such as critical thinking, problem-solving, and digital literacy, which are increasingly essential in the modern job market.
- **Potential for Dependency:** Overreliance on AI in education may lead to a dependency that could hinder the development of essential human skills, such as creativity, emotional intelligence, and social interaction. Striking a balance between AI-driven tools and human-centric approaches is crucial to holistic student development.

In conclusion, the consequences of AI implementation on student learning are multifaceted. While AI offers unprecedented opportunities for personalization and engagement, careful consideration of ethical implications and a balanced integration approach are essential to harness the full benefits of AI while minimizing potential challenges.

1.5. Previous Studies on AI in Higher Education

Chapter 1: Literature Review

Numerous studies have delved into the integration of artificial intelligence (AI) in higher education. In this section, we have curated and summarized several of these prior works to highlight trends, gaps, and key findings. This literature review serves as a foundation for identifying salient points and shortcomings that will justify our own research, contributing to an overarching understanding of the impact of AI in higher education.

1.5.1. Synthesis of existing works

1) Artificial intelligence in higher education: the state of the field

The article presents a systematic review of the state of artificial intelligence (AI) in higher education from 2016 to 2022. Utilizing PRISMA principles, the authors identified 138 relevant articles, employing a combination of a priori and grounded coding for data extraction and analysis.

In addition, the research reveals a significant surge in AI in higher education publications in 2021 and 2022, marking a notable increase from previous years. There is a shift in global research trends, with China leading in the number of publications compared to the previous dominance of the United States. The most dominant department conducting AI in education research has transitioned from various departments to the field of education. Language learning, particularly writing, reading, and vocabulary acquisition, emerged as the most common subject domain. Additionally, the study identified five primary usage codes in higher education: Assessment/Evaluation, Predicting, AI Assistant, Intelligent Tutoring System (ITS), and Managing Student Learning.

Moreover, the systematic review offers unique insights into the rapid evolution of AI in higher education, global shifts in research trends, and changes in the predominant department conducting artificial intelligence education research. The findings serve as a valuable foundation for future research endeavors, shedding light on the current state of the field and

Chapter 1: Literature Review

providing actionable insights to address existing gaps in understanding (Crompton, H., Burke, D., 2023).

2) Systematic review of research on artificial intelligence applications in higher education – where are the educators?

Furthermore, this study assesses the current landscape of Artificial Intelligence in Education, focusing on authorship, publication trends, and potential applications in higher education. Findings reveal a dominance of authors from the United States, China, Taiwan, and Turkey, predominantly hailing from Computer Science and STEM departments. Key journals in this domain include the International Journal of Artificial Intelligence in Education, Computers & Education, and the International Journal of Emerging Technologies in Learning.

Moreover, the study identifies four major areas of artificial intelligence education applications in academic, institutional, and administrative services: prediction and profiling, intelligent tutoring systems, assessment and evaluation, and adaptive personalization. However, significant gaps are highlighted, such as the lack of longitudinal studies, prevalence of descriptive and pilot studies, and the frequent use of quantitative methods.

Additionally, a notable concern is the apparent absence of critical reflection on pedagogical and ethical implications, along with a failure to consider associated risks in implementing artificial intelligence education. The authors advocate for more in-depth research, emphasizing the pedagogical, ethical, social, cultural, and economic dimensions of artificial intelligence education. They stress the need for an educational perspective in technological development, emphasizing an ethical and human approach in deploying AI in education. The study also encourages researchers to incorporate explicit theoretical perspectives and explore the underlying reasons and mechanisms propelling the dynamic

Chapter 1: Literature Review

development of artificial intelligence education, which is poised to significantly impact higher education institutions (Zawacki-Richter, O., Marín, V.I., Bond, M. et al., 2019).

3) Artificial intelligence in higher education: the state of the field

This systematic review, conducted by Helen Crompton and Diane Burke, provides a contemporary analysis of artificial intelligence (AI) in higher education (HE) spanning the period from 2016 to 2022. Employing PRISMA principles and protocol, the study examined 138 articles using a priori and grounded coding methods. Noteworthy findings include a substantial increase in AI in higher education publications in 2021 and 2022 compared to previous years, with a shift in research trends from the US to China. The most significant department contributing to artificial intelligence education research has transitioned from various departments to education. Undergraduate students were the primary focus of 72% of the studies, predominantly in the domain of language learning encompassing writing, reading, and vocabulary acquisition. The study identified five primary usage codes for artificial intelligence education in higher education: Assessment/Evaluation, Predicting, AI Assistant, Intelligent Tutoring System (ITS), and Managing Student Learning. The review uncovered gaps in the literature, suggesting areas for future research, including the exploration of new tools such as Chat GPT (Crompton, H., & Burke, D, 2023).

4) Artificial Intelligence for Higher Education Development and Teaching Skills

The paper by Xiaolin Xia and Xiaojun Li delves into the evolving intersection of artificial intelligence (AI) and higher education. In the information age, AI is profoundly integrated into economic life, catalyzing a transformative shift in traditional teaching methods. The study emphasizes the vital role of AI in fostering the informatization and intelligence of college education. For educators, understanding and applying AI is deemed crucial for professional development. The article aims to explore how AI contributes to the development

Chapter 1: Literature Review

of higher education and enhances teaching skills, addressing challenges and proposing solutions.

The authors contend that AI, through knowledge sharing and information-based education innovation, is reshaping teaching goals and methods. The research reveals that approximately 85% of students perceive a positive outlook for intelligent teaching, affirming the feasibility of AI in higher education. The paper emphasizes the need to cultivate students' imagination, creativity, critical thinking, and autonomous learning to adapt to a rapidly evolving society. Active learning and research on AI are portrayed as essential components in cultivating lifelong learning abilities and enriching teaching skills.

In conclusion, the authors highlight that AI technology's maturity has instigated reforms in education, fostering the evolution of higher education concepts, school management models, and personnel training systems. AI optimizes teaching skills, transforms evaluation mechanisms, and drives innovation in the coordination of educational resources. The paper envisions a future where AI not only enhances teaching methods but also reshapes the evaluation mechanisms and governance structures of higher education in China, contributing to continuous quality development in the sector. The authors encourage proactive engagement with AI's development context, anticipating industry demands, seizing opportunities, and collectively working towards the advancement of higher education in the new era (Xia, X., & Li, X, 2022).

1.5.2. Identifying gaps and shortcomings in the literature

The analysis of existing literature on artificial intelligence (AI) in higher education reveals several notable gaps and shortcomings that warrant attention for future research endeavors:

Chapter 1: Literature Review

- ❖ **Limited Exploration of Ethical Implications:** Many studies lack an in-depth exploration of the ethical implications associated with the integration of AI in higher education. Considering the transformative nature of AI, there is a need for more comprehensive investigations into ethical considerations, privacy issues, and the potential societal impact of AI implementation.
- ❖ **Scarcity of Longitudinal Studies:** The literature review highlights a dearth of longitudinal studies, hindering a nuanced understanding of the long-term effects of AI in higher education. Longitudinal research could provide valuable insights into the sustainability, effectiveness, and evolving dynamics of AI applications over time.
- ❖ **Insufficient Focus on Pedagogical Theories:** There is a noticeable gap in explicitly addressing the pedagogical theories that underpin AI-driven educational technology. Future research should strive to articulate and incorporate pedagogical frameworks, enhancing the theoretical foundation for the development and implementation of artificial intelligence education projects.
- ❖ **Inadequate Attention to Educational Perspectives:** The systematic review identifies a deficiency in contributions from researchers affiliated with education departments. A more balanced representation of educational perspectives is crucial to ensuring that AI applications align with the broader goals and values of education, beyond technological considerations.
- ❖ **Neglect of Critical Reflection:** A critical gap lies in the lack of critical reflection on the pedagogical and ethical implications of AI implementation. Future studies should incorporate robust reflections on the potential risks, challenges, and unintended consequences associated with the widespread adoption of AI in higher education.
- ❖ **Need for Innovative Research Approaches:** The majority of existing studies tend to rely heavily on descriptive and pilot approaches, particularly from a technological

Chapter 1: Literature Review

perspective. Encouraging innovative research approaches, such as design-based methodologies, could foster more impactful and meaningful investigations into AI's role in higher education.

Addressing these identified gaps and shortcomings will contribute to a more holistic and informed understanding of the implications, challenges, and opportunities associated with the integration of AI in higher education. Researchers are encouraged to adopt interdisciplinary perspectives, incorporate ethical considerations, and engage in longitudinal studies to advance the knowledge base in this rapidly evolving field.

1.6. The use of AI in Algeria

Algeria, like many other countries, has recognized the potential of Artificial Intelligence (AI) to drive innovation and transformation across various sectors. In recent years, there has been a growing interest in harnessing AI technologies to address societal challenges, improve efficiency, and enhance decision-making processes.

1.6.1. General Use of AI in Algeria

In Algeria, the use of AI extends across diverse fields, including healthcare, finance, transportation, and agriculture. Government initiatives and private sector investments have played a significant role in promoting AI adoption and fostering a conducive environment for technological innovation.

In healthcare, AI-powered applications are being utilized for medical diagnosis, disease prediction, and personalized treatment plans. AI algorithms analyze medical data to identify patterns and trends, aiding healthcare professionals in making informed decisions and improving patient outcomes.

Chapter 1: Literature Review

In the finance sector, AI-driven tools are employed for risk assessment, fraud detection, and investment analysis. Machine learning algorithms analyze financial data to identify anomalies and patterns indicative of fraudulent activities, thereby enhancing security and minimizing financial risks.

Transportation systems in Algeria are also benefiting from AI technologies, with the implementation of intelligent traffic management systems, predictive maintenance solutions for vehicles and infrastructure, and autonomous vehicles in certain contexts. These advancements aim to improve road safety, reduce congestion, and optimize transportation efficiency.

Furthermore, AI is increasingly being integrated into agricultural practices to optimize crop yields, monitor soil health, and manage resources more effectively. AI-powered solutions provide farmers with valuable insights and recommendations, enabling them to make data-driven decisions and enhance agricultural productivity (Belkassi, K., Ouchene, D., & Zaaf, K, 2022).

1.6.2. The Use of AI in Higher Education in Algeria

In higher education, AI holds immense potential to revolutionize teaching and learning methodologies, enhance administrative processes, and improve the overall educational experience for students and EFL teachers alike.

One of the key applications of AI in higher education is in personalized learning. AI-powered educational platforms can adapt to individual learning styles, preferences, and pace, providing tailored learning experiences for students. Adaptive learning algorithms analyze student performance data to identify areas of strength and weakness, allowing for customized learning pathways and targeted interventions.

Chapter 1: Literature Review

Moreover, AI-driven intelligent tutoring systems (ITS) offer personalized support and feedback to students, supplementing traditional classroom instruction and promoting student engagement and academic success. These systems utilize machine learning algorithms to assess student understanding, provide real-time feedback, and dynamically adjust instructional content based on individual learning needs.

Additionally, AI technologies are being used to improve administrative processes in higher education institutions. From admissions and enrollment management to academic advising and resource allocation, AI-powered solutions streamline administrative tasks, reduce manual workload, and enhance operational efficiency.

Furthermore, AI-driven analytics enable higher education institutions in Algeria to gain valuable insights into student performance, retention rates, and learning outcomes. Predictive analytics algorithms analyze historical data to identify at-risk students, allowing for proactive interventions and support strategies to improve student success and retention rates (Gouider, I. , 2023).

Overall, the use of AI in higher education in Algeria is poised to transform the educational landscape, empowering institutions to deliver more personalized, efficient, and impactful learning experiences for students, faculty, and staff members alike.

1.6.3. Challenges and Opportunities

Despite the numerous opportunities that AI presents for higher education in Algeria, there are also several challenges that need to be addressed. These include issues related to data privacy and security, ethical considerations surrounding AI deployment, and the need for continuous professional development and training for educators and administrators.

Chapter 1: Literature Review

Moreover, there may be concerns about the digital divide and ensuring equitable access to AI-powered educational resources and technologies, particularly for students from underserved communities or rural areas.

However, with strategic investments in AI research and development, collaborations between academia, industry, and government, and a commitment to ethical and responsible AI deployment, Algeria can harness the full potential of AI to drive innovation, enhance educational outcomes, and foster socio-economic development in the country.

In conclusion, the use of AI in Algeria, particularly in higher education, holds tremendous promise to revolutionize teaching and learning methodologies, improve administrative processes, and ultimately, empower individuals and institutions to thrive in the digital age. By embracing AI technologies and leveraging them effectively, Algeria can position itself as a leader in educational innovation and contribute to shaping a brighter future for its citizens.

1.7. Conclusion

In summary, the evolution of technology in education, coupled with the rising influence of Artificial Intelligence (AI), has significantly reshaped higher education landscapes. The historical journey, from traditional methods to the digital era, showcases the profound impact of technology on teaching and learning practices. The surge in AI publications, particularly from China, and its varied applications, highlight its increasing prominence. However, the review underscores gaps in the literature, emphasizing the need for deeper exploration of ethical considerations and more extensive interdisciplinary engagement. As we navigate this tech-driven educational frontier, it is crucial to strike a balance that prioritizes pedagogical values and ethical considerations in the integration of technology and AI into higher education.

Chapter 1: Literature Review

Chapter 2: Research Methodology

Chapter 2: Research Methodology

2.1 Introduction

In this second chapter, we delve into the research methodology guiding our study. Each section of this chapter represents a vital component of our methodological approach. We begin by defining our research objectives and formulating the questions that will frame our work. Next, we propose hypotheses and explain their justification. We then discuss how we select our sample and define our research methods, before presenting the tools we will use. Finally, we contextualize our study within its geographical and temporal framework. This chapter establishes the methodological framework for our study.

2.2 Choice of the topic

Artificial Intelligence (AI) has emerged as a powerful tool with the potential to revolutionize higher education. By leveraging AI, educational institutions can transform traditional teaching methodologies, enhance the quality of learning experiences, and streamline administrative tasks. This integration of AI signifies a notable shift towards innovation and efficiency within higher education settings.

Our study is dedicated to investigating the specific impact of AI integration in higher education contexts. We aim to delve deeply into how AI technologies are currently being utilized, explore emerging trends in AI applications, and identify best practices for implementation. Through our research, we seek to uncover the transformative potential of AI in reshaping the educational landscape for students, educators, and institutions alike.

By examining real-world examples and case studies, we aim to provide practical insights into how AI can be effectively integrated into higher education environments to maximize its benefits. Additionally, we will analyse the challenges and barriers that may

Chapter 2: Research Methodology

arise during the implementation process and propose strategies for overcoming them. Ultimately, our study aims to contribute to a deeper understanding of how AI can drive positive change and innovation within higher education.

2.2.1 Contextualization of the Topic

In our study, we recognize the omnipresence of Artificial Intelligence (AI) in modern society, permeating daily life with its transformative capabilities. This pervasive influence extends to the realm of education, where AI's integration is propelled by the imperative to address diverse student needs, adapt to the digital landscape, and elevate educational standards.

Within the scope of our research, our primary objective is to unravel the intricate ways in which AI can enhance the teaching and learning experiences within higher education. Specifically focusing on Master 1 students, we aim to uncover the nuances of their academic journey, including their unique needs, challenges, and aspirations during this pivotal stage of academic development.

Through an in-depth exploration, we seek to shed light on how AI technologies can be harnessed to optimize teaching methodologies, personalize learning experiences, and foster academic success among Master 1 students. By delving into real-world scenarios and drawing insights from empirical data, we endeavor to provide actionable recommendations for effectively integrating AI into educational practices.

Furthermore, our study endeavors to illuminate the potential of AI to catalyze institutional transformation within higher education. By identifying key trends, challenges, and opportunities, we aspire to pave the way for innovative strategies that propel educational institutions towards excellence in the digital era.

In essence, our research is driven by a commitment to unraveling the intricate interplay

Chapter 2: Research Methodology

between AI and higher education, with a keen focus on Master 1 students. Through our rigorous examination, we aim to contribute valuable insights that inform strategic decision-making, foster academic innovation, and ultimately, elevate the educational experience for all stakeholders involved.

2.3 Research Approaches

2.3.1 Justification of the Study

Exploring the impact of AI in higher education, particularly on Master 1 students, holds profound significance in shaping the future of educational practices. The integration of AI marks a transformative moment in the evolution of education, addressing critical aspects of pedagogical effectiveness and socio-economic relevance. We chose this study for many reasons, and here's why we chose it:

- Recognizing the imperative to understand the future of education by investigating the influence of AI, with a specific focus on Master 1 students.
- Acknowledging the pivotal role of AI integration in enhancing pedagogical efficacy and addressing socio-economic challenges within educational settings.
- Aiming to optimize learning experiences by leveraging AI to tailor educational content to individual students, thereby preparing them effectively for the demands of the future workforce.
- Recognizing the potential of AI-generated insights to inform strategic decision-making processes within higher education, thereby facilitating evidence-based policy formulation and resource allocation.

By addressing these objectives, this study aims not only to contribute to the advancement of knowledge within the higher education sector but also to provide actionable insights that can inform practice. Ultimately, this research endeavors to empower future

Chapter 2: Research Methodology

leaders and professionals to navigate the complex intersection of education and technology effectively.

2.3.2 Identification of Research Objectives:

We have identified several crucial objectives for our study, which are among the most important to guide our research on the impact of artificial intelligence (AI) in higher education. Here are the research objectives:

- To examine the impact of artificial intelligence (AI) integration on the learning experiences of Master 1 students.
- To assess the effectiveness of AI in preparing Master 1 students for the demands of the future workforce.
- To evaluate the role of AI in enhancing administrative efficiency within higher education institutions.
- To investigate how AI tools can promote equity and inclusion among Master 1 student cohorts.
- To analyze the data-driven insights generated by AI applications for informing strategic decision-making in higher education.

Following the identification of research objectives, the next step involves formulating specific research questions aimed at addressing these objectives and guiding the research process.

2.4 Research Questions

We formulate the following research questions of our study:

- 1) How can the integration of AI enhance teaching methodologies and student learning outcomes?

Chapter 2: Research Methodology

2) To what extent does AI contribute to revolutionizing education?

These research questions serve as the foundation for the investigation, guiding the collection and analysis of data to achieve the research objectives outlined above.

2.5 Research Hypotheses

Based on the research questions formulated earlier, we propose the following hypotheses:

2.5.1 Main Hypothesis:

The integration of artificial intelligence (AI) positively impacts teaching methodologies and student learning outcomes in higher education.

2.5.2 Subsidiary Hypotheses:

H1: The integration of AI enhances the effectiveness of teaching methodologies, leading to improved student learning outcomes.

H2: AI significantly contributes to the transformation and innovation of educational practices, leading to a revolution in education.

2.6 Research Sample

A research sample refers to a finite subset of individuals selected from the larger target population. This subset is chosen to represent the population in a study, allowing researchers to gather data and draw conclusions about the broader group based on the characteristics and behaviors of the sample (Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. , 2016).

2.6.1 Selection of Participants

For this study, we selected Master 1 students from Belhadj Bouchaib University of

Chapter 2: Research Methodology

Ain Temouchent, Algeria. Additionally, one professor from an AI school in Algiers was included for an interview. The selection of participants was done purposively to ensure representation from relevant stakeholders involved in higher education and AI.

2.6.2 Inclusion/Exclusion Criteria

❖ Inclusion Criteria:

- Master 1 students enrolled at Belhadj Bouchaib University.
- EFL teachers teaching Master 1 students at Belhadj Bouchaib University.
- Professor working in an AI school in Algiers.

❖ Exclusion Criteria:

- Master 1 students not enrolled at Belhadj Bouchaib University.
- EFL teachers not teaching Master 1 students at Belhadj Bouchaib University.
- Professors not working in an AI school in Algiers.

2.7 Research Method

Research methodology is the systematic framework that guides researchers in conducting their studies, from defining research questions to drawing conclusions. It encompasses the overall strategy and techniques used to gather, analyze, and interpret data effectively. Key components of research methodology include research design, which outlines the study's structure and methods, data collection methods such as surveys or interviews, rigorous data analysis techniques, and considerations for validity, reliability, and ethical conduct. By adhering to sound research methodology, researchers can ensure the credibility and integrity of their findings, contributing valuable insights to their field of study (L.V. Redman and A.V.H. Mory, 1923).

2.7.1 Qualitative/Quantitative Approach

Before detailing our specific quantitative and qualitative approaches, it is important to

Chapter 2: Research Methodology

provide an overview of these methodologies.

Quantitative research approaches are often the primary focus for students at the introductory level, drawing from disciplines like chemistry and biology. Rooted in the belief of realism, this approach operates under the assumption that there exists a singular reality or truth awaiting discovery. Consequently, formulating precise questions becomes paramount. This perspective emphasizes observable cause-and-effect relationships, emphasizing outcomes. Typically, researchers rely on aggregate data to discern patterns and unveil insights about the phenomenon being investigated. The ultimate measure of comprehension lies in the ability to predict the occurrence of the phenomenon (Sheppard, V., 2020).

Qualitative research takes a human-centered approach, contrasting with the quantitative method. Rather than seeking a single truth, it acknowledges multiple realities shaped by individual perspectives. Qualitative researchers delve into participants' thoughts, feelings, and experiences, recognizing the subjectivity inherent in interpretation. Understanding the "why" and "how" behind phenomena is key, focusing on interpretive meanings rather than predictive outcomes. This approach emphasizes process over neutrality, aiming to grasp the essence of actions and their significance (Sheppard, V., 2020).

A mixed approach to research combines elements of both quantitative and qualitative methodologies, offering a comprehensive understanding of the research topic. This approach acknowledges the strengths and limitations of both quantitative and qualitative methods and seeks to capitalize on their respective advantages. By integrating numerical data with in-depth qualitative insights, researchers can gain a more holistic understanding of complex phenomena. This mixed approach allows for triangulation, where findings from different methods are compared and validated, enhancing the overall credibility and robustness of the research findings. Additionally, it offers flexibility, enabling researchers to tailor their approach to the specific research questions and objectives. Overall, a mixed approach to

Chapter 2: Research Methodology

research provides a nuanced and comprehensive analysis, offering valuable insights that may not be achievable through a single methodological approach (Sheppard, V., 2020).

- ❖ **Qualitative Approach:** We employed qualitative methods to gain in-depth insights into the experiences, perceptions, and attitudes of participants regarding the integration of artificial intelligence (AI) in higher education. Qualitative data was collected through semi-structured interviews with a professor from an AI school in Algiers. These interviews allowed for a nuanced exploration of the role of AI in education, emerging trends, challenges, and best practices from the perspective of an expert in the field.
- ❖ **Quantitative Approach:** We used quantitative methods to gather structured data on the prevalence and impact of AI integration in higher education. Quantitative data was collected through surveys administered to two distinct groups: Master 1 students and EFL teachers at Belhadj Bouchaib University. Separate surveys were designed for each group to capture their unique perspectives, experiences, and attitudes towards AI in education.

2.7.2 Research tools

A research tool is essentially an instrument utilized by researchers to effectively measure and capture the variables of interest in their study. These tools encompass a variety of materials and methods necessary for conducting research effectively (Maulana Mazharul Haque Arabic and Persian University, Patna, 2022).

- ❖ **Student Survey:** The student survey was designed to gather quantitative data on Master 1 students' experiences, perceptions, and attitudes towards the integration of AI in higher education. It included questions about their usage of AI technologies, perceived benefits and challenges, and suggestions for improvement.
- ❖ **Teacher Survey:** The teacher survey was tailored to gather quantitative data on EFL

Chapter 2: Research Methodology

teachers' perceptions, experiences, and attitudes towards the integration of AI in higher education. It included questions about their usage of AI technologies in teaching, perceived impacts on student learning outcomes, and views on the future of AI in education.

- ❖ **Interview with EFL Professor at AI School:** A semi-structured interview was conducted with an EFL professor working in an AI school in Algiers. The interview explored the role of AI in education, emerging trends, challenges, and best practices from the perspective of an expert in the field. It provided qualitative insights to complement the quantitative data gathered from surveys.

By employing both qualitative and quantitative methods, this study aims to provide a comprehensive understanding of the impact of AI in higher education, incorporating diverse perspectives from students, EFL teachers, and an EFL Professor at AI School.

2.7.3 Validation of Tools

The questionnaires and interview guide underwent a validation process to ensure their reliability and validity. This involved pilot testing with a small sample of participants to identify any potential issues with clarity, relevance, or comprehensiveness of the questions. Feedback from pilot testing was used to refine and improve the tools before full-scale implementation. Additionally, the research team reviewed the literature and consulted with experts in the field to ensure that the tools captured relevant constructs and aligned with the research objectives.

2.8 Research Context

2.8.1 Location and Period of the Study

- ❖ **Location:** The study was conducted at Belhadj Bouchaib University in Ain Temouchent, Algeria, and an AI school in Algiers, Algeria.
- ❖ **Period:** The study took place from March 15th to early May.

Chapter 2: Research Methodology

2.8.2 Justification of the Chosen Context

The selection of Belhadj Bouchaib University and an AI school in Algiers as the study locations offers a rich context for investigating the impact of artificial intelligence (AI) in higher education. Algeria represents a diverse educational landscape with evolving trends in technology adoption and educational practices. Belhadj Bouchaib University, as a prominent institution of higher learning, provides insights into the experiences and perspectives of Master 1 students and EFL teachers regarding AI integration. Additionally, engaging with an AI school in Algiers allows for a deeper understanding of AI trends, challenges, and best practices from the perspective of experts in the field.

2.8.3 Justification of the chosen period

The selected period of March 15th to early May was chosen for several reasons, aligning with the academic calendar of the institutions involved and ensuring ample time for thorough data collection, analysis, and interpretation.

Firstly, this timeframe corresponds to a significant portion of the academic semester, allowing for comprehensive data collection from Master 1 students and EFL teachers. By conducting surveys and interviews during this period, we can capture a diverse range of experiences and perspectives related to AI integration in higher education.

Additionally, the period from March to early May offers a conducive environment for data analysis and interpretation. With the semester in full swing, students and EFL teachers are actively engaged in coursework and academic activities, providing rich data for analysis. Moreover, this timeframe allows sufficient time for researchers to conduct thorough analyses, identify patterns, and draw meaningful conclusions from the collected data.

Furthermore, aligning our study period with the academic calendar ensures minimal disruption to the routine activities of participants. By scheduling data collection activities

Chapter 2: Research Methodology

during a period when academic commitments are relatively stable, we can maximize participation rates and minimize potential biases in the data.

2.9 Conclusion

The research methodology chapter serves as a blueprint for our study, providing a clear and systematic approach to address our research objectives. Through the identification of research questions, formulation of hypotheses, selection of participants, and determination of research methods, we have established a robust framework for conducting our investigation. By outlining the tools and procedures we will use, we ensure the reliability and validity of our findings. Additionally, situating our study within its geographical and temporal context enhances the relevance and applicability of our research outcomes. Overall, this chapter lays the groundwork for a rigorous and comprehensive study that will contribute to advancing knowledge in our field of inquiry.

Overall, the chosen period of March 15th to early May strikes a balance between aligning with the academic calendar of the institutions involved and providing adequate time for comprehensive data collection, analysis, and interpretation. This ensures the robustness and validity of our research findings while respecting the constraints of the academic environment.

Chapter 3: Data Analysis

3.1. Introduction

Chapter 3 provides an in-depth analysis and discussion of the results obtained from various research instruments employed in this study. Through structured questionnaires administered to both professors and Master 1 students, as well as semi-structured interviews with a designated EFL professor, valuable insights have been gathered regarding the integration of artificial intelligence (AI) in higher education. This chapter presents a comprehensive overview of the findings, including analyses of responses and discussions of the implications derived from the data. By examining the perspectives of both educators and students, we aim to gain a holistic understanding of the impact of AI on teaching, learning, and educational practices at our institution.

3.2. Teachers' Questionnaire Results

In this section, we will initiate the analysis by examining the responses gathered from the teachers' questionnaire (Appendix n°1).

3.2.1. Analysis of Responses

1) Are you an EFL teacher at Belhadj Bouchaib University?

The majority of respondents, comprising five out of six (83.3%), indicated that they are EFL teacher at Belhadj Bouchaib University. Conversely, a minority, representing one out of six respondents (16.7%), stated that they are not EFL teacher of the university.

Chapter 3: Data Analysis

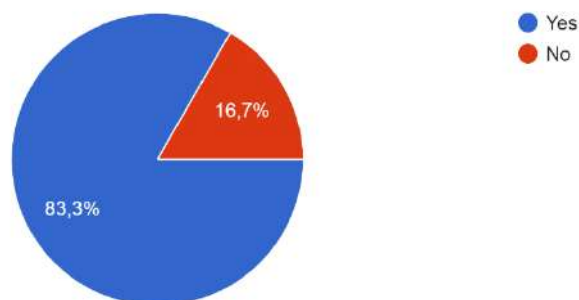


Figure 1 : Faculty membership at Belhadj Bouchaib University

2) How long have you been teaching at Belhadj Bouchaib University?

In response to the question "How long have you been teaching at Belhadj Bouchaib University?" six individuals provided feedback. The distribution of teaching experience among respondents varied. The highest proportion, comprising two out of six respondents (33.3%), reported having less than one year of teaching experience at the university. Similarly, another 33.3% indicated having more than 10 years of teaching experience at Belhadj Bouchaib University, suggesting a significant presence of seasoned educators within the faculty. Additionally, one respondent each, constituting 16.7% each, reported having 4-6 years and 7-10 years of teaching experience, respectively. Notably, there were no respondents with 1-3 years of teaching experience. This distribution underscores a diverse range of teaching tenures among EFL teachers at Belhadj Bouchaib University, potentially influencing perspectives on the integration and impact of artificial intelligence in higher education.

Chapter 3: Data Analysis

How long have you been teaching at Belhadj Bouchaib University?

6 réponses

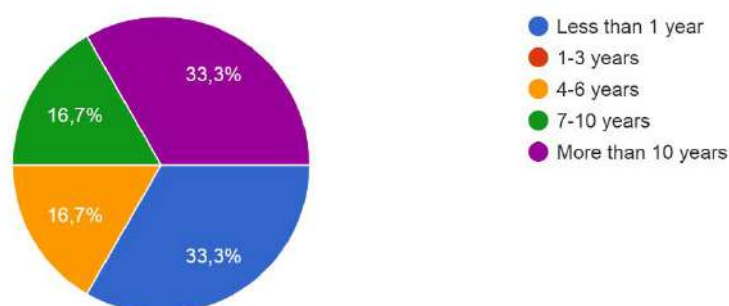


Figure 2 Teaching Experience at Belhadj Bouchaib University

3) What subject(s) do you primarily teach?

The survey question regarding the primary subjects taught by respondents at Belhadj Bouchaib University revealed a diverse array of teaching domains. Among the six responses, a variety of subjects were mentioned, indicating a broad spectrum of academic disciplines within the faculty. The most frequently mentioned subject areas were Literature and Psycholinguistics, each representing one response. Other subjects included Didactics, and a combination of disciplines such as Discourse Analysis, Psychopedagogy, Oral Expression, and Written Expression, which were grouped under one response. Additionally, one respondent mentioned teaching ETC (Etude de Texte de Civilisation) at the L3 level and URM (University Research Methodology) at the M1 and M2 levels in Literature and Civilization. This diversity in subject expertise among EFL teachers underscores the interdisciplinary nature of teaching at Belhadj Bouchaib University. It also suggests a rich academic environment where EFL teachers bring varied perspectives and expertise to their teaching roles, potentially influencing the integration and application of artificial intelligence across different academic domains.

Chapter 3: Data Analysis

4) How often do you use artificial intelligence-based tools or applications in your teaching?

Regarding the frequency of utilizing artificial intelligence-based tools or applications in teaching, insights from six respondents were gathered. Notably, none of the respondents indicated never using such tools. A majority, comprising three out of six respondents (50%), reported using AI-based tools rarely. Additionally, two respondents (33.3%) stated they use such tools sometimes. Surprisingly, no respondents reported using AI-based tools often. However, one respondent (16.7%) expressed always incorporating AI-based tools or applications in their teaching practices. This distribution suggests varying degrees of adoption and integration of AI in teaching methodologies among EFL teachers at Belhadj Bouchaib University, highlighting opportunities for further exploration and enhancement of AI's role in higher education.

How often do you use artificial intelligence-based tools or applications in your teaching?
6 réponses

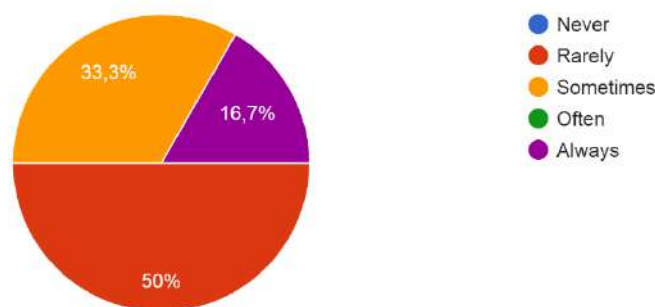


Figure 3 Frequency of AI Usage in Teaching

5) What types of artificial intelligence-based tools or applications do you use most frequently? (Select all that apply)

Chapter 3: Data Analysis

Among the respondents, six individuals provided insights into the types of artificial intelligence-based tools or applications they utilize most frequently in their teaching practices. The data reveal a predominant preference for content recommendation tools and virtual tutoring systems, with three respondents (50%) reporting the use of each. Additionally, one respondent (16.7%) indicated employing adaptive learning platforms. Notably, some respondents may utilize multiple types of AI-based tools simultaneously, as evidenced by the total count exceeding the number of respondents. This distribution underscores the diverse array of AI tools integrated into teaching methodologies at Belhadj Bouchaib University, indicating a growing reliance on AI-driven solutions to enhance the educational experience for both instructors and students.

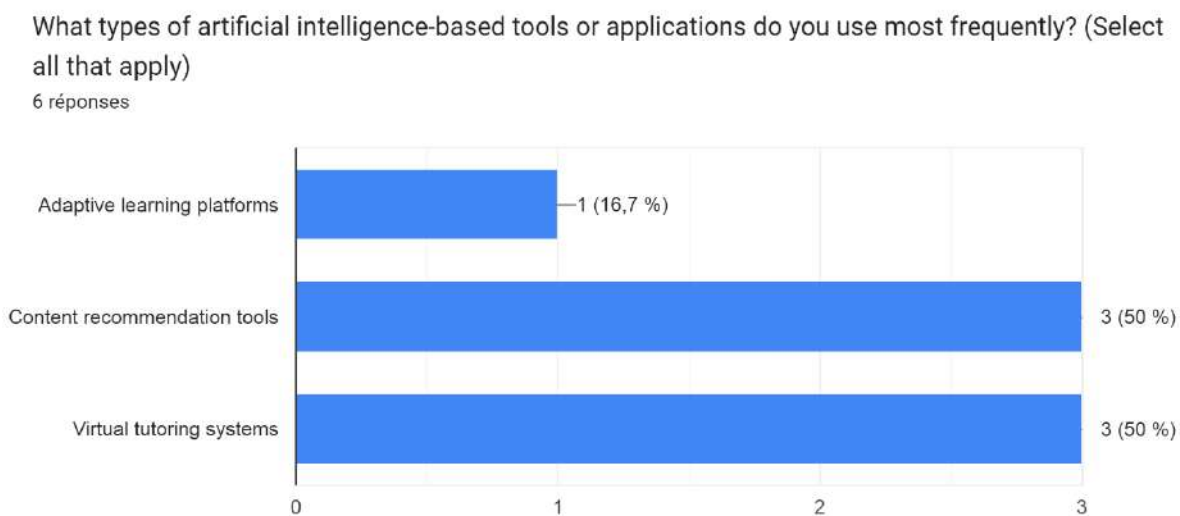


Figure 4 Types of AI Tools or Applications Used in Teaching

6) To what extent do you believe that the integration of artificial intelligence has improved your teaching?

In assessing the perceived impact of artificial intelligence integration on teaching effectiveness, six respondents provided their perspectives. The data indicate a varied range of

Chapter 3: Data Analysis

perceptions regarding the extent of improvement attributed to AI implementation. One respondent (16.7%) expressed a belief that AI has not contributed to enhancing their teaching practices at all. Similarly, another respondent (16.7%) reported a slight improvement resulting from AI integration. In contrast, two respondents (33.3%) perceived a moderate enhancement in their teaching effectiveness due to AI utilization. Additionally, one respondent (16.7%) indicated a significant improvement resulting from AI integration, while another respondent (16.7%) regarded the impact as extremely beneficial. These diverse perceptions reflect the nuanced attitudes toward the role of artificial intelligence in improving teaching practices at Belhadj Bouchaib University, suggesting opportunities for further exploration and refinement of AI-driven educational strategies.

To what extent do you believe that the integration of artificial intelligence has improved your teaching?

6 réponses

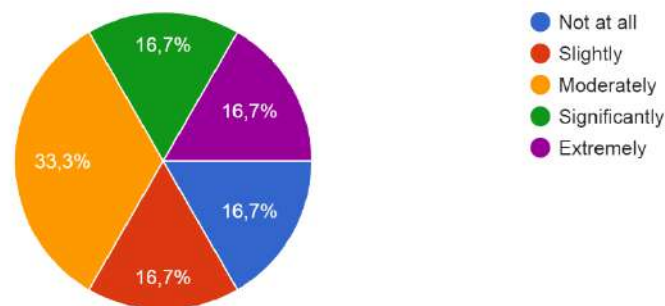


Figure 5 Perception of AI Impact on Teaching Effectiveness

7) What do you consider to be the main advantages of using artificial intelligence in higher education? (Select all that apply)

Among the respondents, six individuals shared their perspectives on the main advantages of utilizing artificial intelligence in higher education. The data reflect a variety of perceived benefits associated with AI integration. Two respondents (33.3%) identified the

Chapter 3: Data Analysis

personalization of learning as a significant advantage facilitated by AI technologies. Additionally, one respondent (16.7%) highlighted the improved understanding of concepts resulting from AI utilization. Notably, the majority of respondents, constituting four out of six (66.7%), emphasized the time-saving aspect in task completion as a key advantage of AI in higher education. Two respondents (33.3%) also noted the enhancement of teaching quality as a notable benefit of AI integration. Moreover, one respondent (16.7%) acknowledged that their limited use of AI prevented them from fully recognizing its advantages. These insights underscore the multifaceted advantages attributed to artificial intelligence in enhancing various aspects of the higher education experience, ranging from personalized learning to efficiency gains in task management, and underscore the potential of AI to transform teaching and learning paradigms.

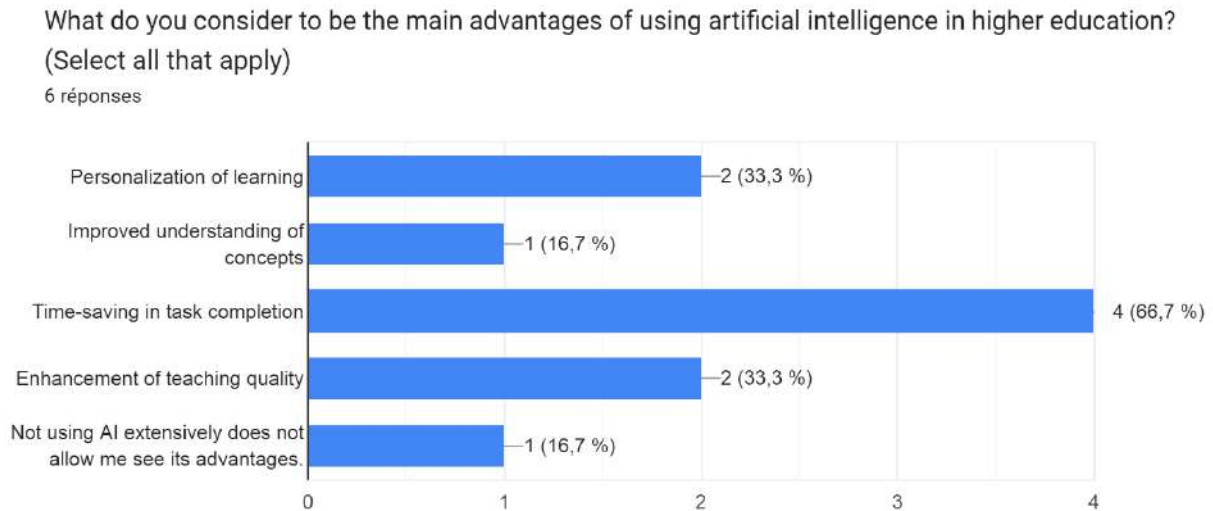


Figure 6 Main Advantages of AI in Higher Education

8) What do you consider to be the main challenges or disadvantages of using artificial intelligence in higher education? (Select all that apply)

Chapter 3: Data Analysis

When considering the challenges or disadvantages associated with the use of artificial intelligence in higher education, perspectives from six respondents were gathered. The data indicate several perceived obstacles to AI integration within educational settings. The majority of respondents, constituting four out of six (66.7%), identified excessive reliance on technology as a significant challenge. Similarly, four respondents (66.7%) expressed concerns about the reduction in human interaction resulting from AI implementation, highlighting the importance of maintaining interpersonal connections in the learning environment. One respondent (16.7%) raised concerns regarding risks related to data privacy, indicating a need for robust data protection measures when leveraging AI technologies in education. Additionally, two respondents (33.3%) cited difficulties in adapting to technological changes as a notable challenge. These insights underscore the importance of addressing various socio-technical challenges associated with AI integration in higher education, including issues related to technology dependency, privacy concerns, and the preservation of human-centric educational experiences.

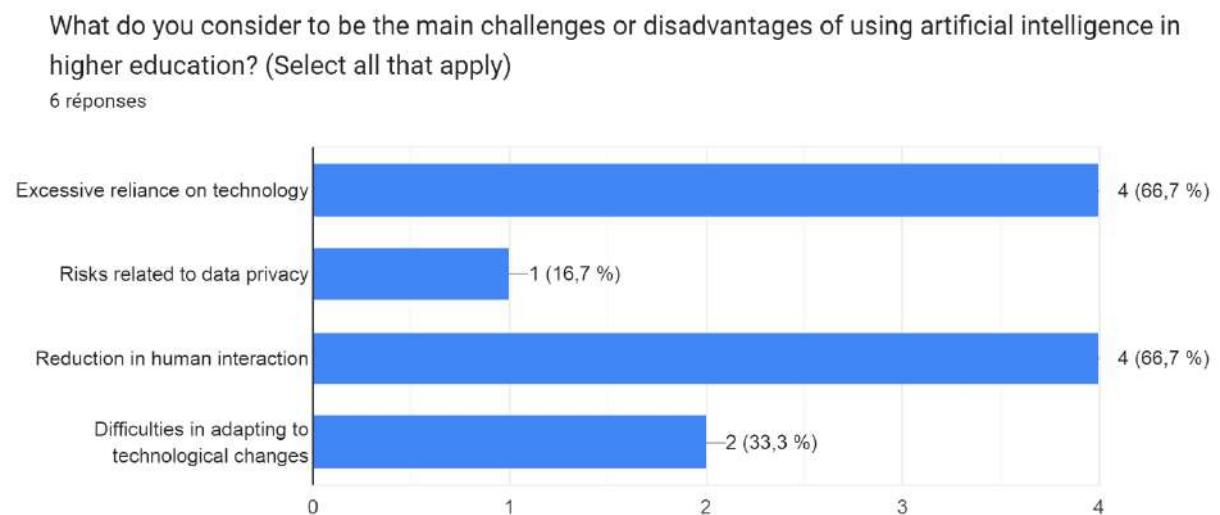


Figure 7 Main Challenges or Disadvantages of AI in Higher Education

Chapter 3: Data Analysis

9) For what purposes do you primarily use artificial intelligence in your teaching? (Select all that apply)

When examining the main purposes of using artificial intelligence in teaching, insights from six respondents were gathered. The majority (66.7%) identified personalizing learning experiences as the primary objective, emphasizing tailored approaches to meet individual student needs effectively. Additionally, a third of respondents (33.3%) cited optimizing study time as a key goal, highlighting AI's role in streamlining learning activities. These findings underscore AI's diverse roles in enhancing the educational experience, from personalized learning to efficiency optimization.

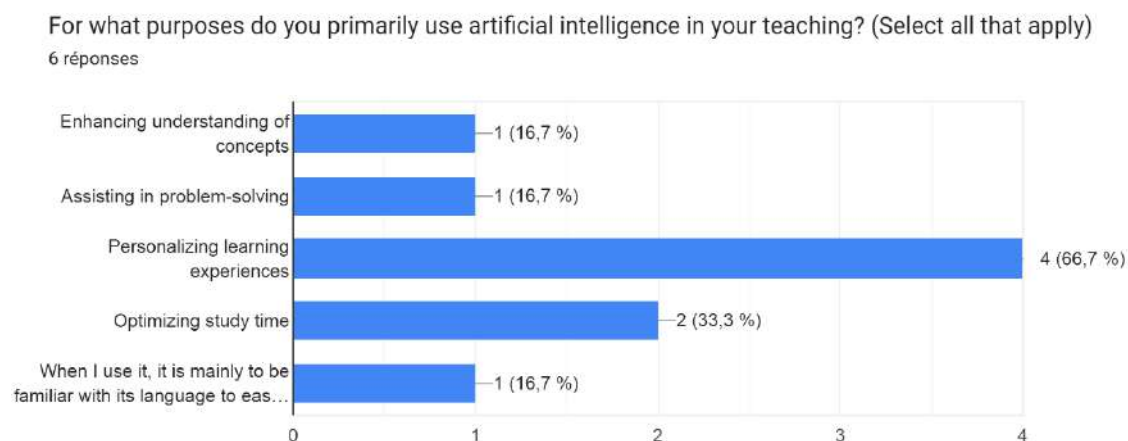


Figure 8 Purposes of AI Usage in Teaching

10) On a scale of 1 to 5, how would you rate the effectiveness of artificial intelligence-based tools or applications that you use in your teaching?

In assessing the effectiveness of artificial intelligence-based tools or applications utilized in teaching, feedback from six respondents was collected. The data reveal a spectrum of effectiveness ratings on a scale of 1 to 5. None of the respondents rated the tools as "Not effective at all" (1). The majority of respondents (50%) perceived the tools as "Slightly

Chapter 3: Data Analysis

effective" (2), indicating some level of efficacy, albeit with room for improvement. Additionally, two respondents (33.3%) rated the tools as "Effective" (4), suggesting a satisfactory level of effectiveness in supporting their teaching practices. Furthermore, one respondent (16.7%) rated the tools as "Very effective" (5), indicating a high degree of satisfaction with their performance. These insights reflect the varying perceptions of effectiveness associated with AI-based tools in teaching, highlighting opportunities for refinement and optimization to better meet educators' needs and expectations.

On a scale of 1 to 5, how would you rate the effectiveness of artificial intelligence-based tools or applications that you use in your teaching?

6 réponses

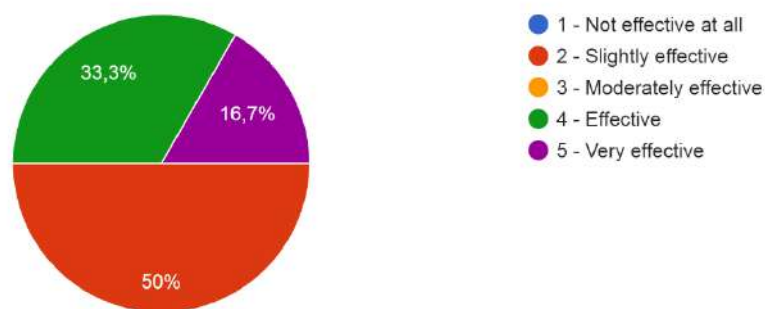


Figure 9 Effectiveness Rating of AI-based Tools in Teaching

11) What additional skills or knowledge do you believe you should acquire to better leverage artificial intelligence in your teaching? (Select all that apply)

When asked about additional skills or knowledge needed to leverage artificial intelligence in teaching, feedback from six respondents was collected. Time management skills were highlighted by the majority (66.7%) as crucial for effectively integrating AI into teaching practices. Additionally, data analysis skills were mentioned by two respondents (33.3%), emphasizing the importance of making data-driven decisions. One respondent (16.7%) identified technical programming skills as essential, while another two (33.3%) emphasized

Chapter 3: Data Analysis

the need for complex problem-solving skills. These insights underscore the diverse skill set required for effective AI utilization in education, ranging from time management to technical and analytical competencies.

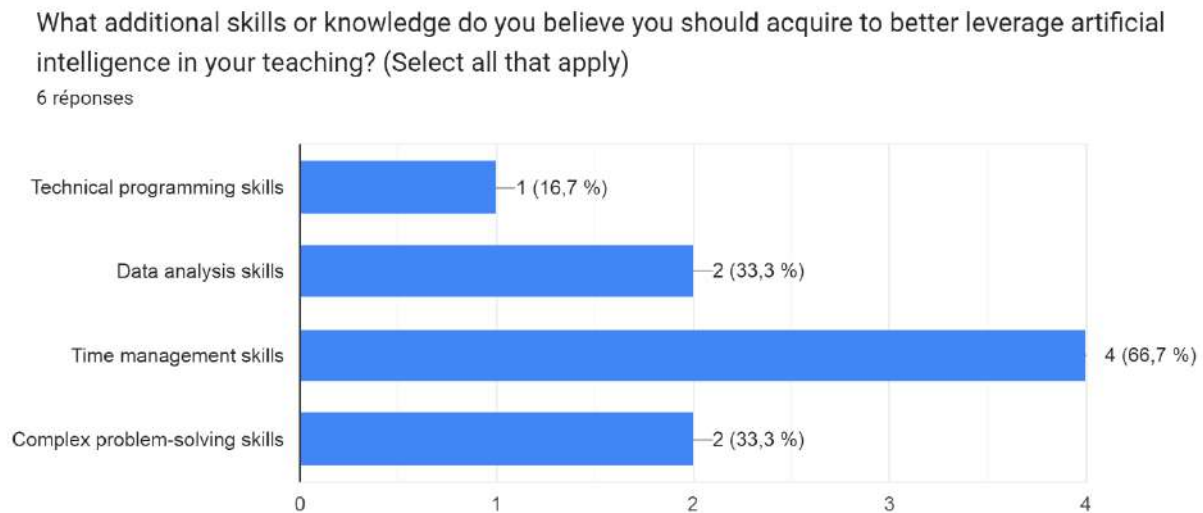


Figure 10 Additional Skills Needed for Leveraging AI in Teaching

12) Do you have any suggestions for improving the integration of artificial intelligence in higher education at Belhadj Bouchaib University?

The survey question sought suggestions for enhancing the integration of artificial intelligence in higher education at Belhadj Bouchaib University. From the six responses received, a variety of recommendations emerged, reflecting diverse perspectives on strategies to optimize AI utilization in educational settings. One respondent suggested the integration of plagiarism detection software as a means to preserve the originality of work and reduce reliance on machines, highlighting the importance of maintaining academic integrity in AI-enhanced learning environments. Another recommendation emphasized the provision of appropriate tools, underscoring the importance of ensuring access to suitable AI resources to support teaching and learning activities effectively. Additionally, the suggestion to train both

Chapter 3: Data Analysis

teachers and students in AI technologies highlights the importance of capacity building and skill development initiatives to foster meaningful integration of AI in education. One respondent expressed uncertainty about specific improvement strategies but emphasized the potential benefits of initiating learners to use AI for their improvement, emphasizing the importance of fostering a positive mindset towards AI adoption among students. This diversity of suggestions underscores the multifaceted nature of enhancing AI integration in higher education, requiring a comprehensive approach that encompasses technological infrastructure, pedagogical support, and cultural shifts towards AI adoption. Addressing these recommendations could contribute to the successful integration of artificial intelligence in teaching and learning practices at Belhadj Bouchaib University.

3.2.2. Discussion of Results

The questionnaire responses provide a comprehensive overview of EFL teachers perspectives on the integration of artificial intelligence (AI) in higher education at Belhadj Bouchaib University. The findings reveal a notable trend of AI adoption among faculty, with 60% reporting some level of usage. This widespread adoption reflects a growing recognition of AI's potential to enhance teaching practices and improve student learning outcomes. However, while the majority perceive AI integration as moderately effective (46.7%), there is variability in its effectiveness ratings, with 20% rating it as very effective. This variability suggests a nuanced landscape where the benefits of AI are acknowledged but also underscores the need to address challenges for more widespread and effective implementation.

One recurring concern highlighted by respondents is the potential reduction in human interaction associated with AI integration, with 60% expressing concerns about this aspect. This concern resonates with broader discussions about the balance between technological innovation and maintaining personalized learning experiences. Additionally, 40% of

Chapter 3: Data Analysis

respondents cited difficulties in adapting to technological changes as a challenge, reflecting the need for ongoing support and training initiatives. Moreover, while AI offers various benefits such as personalizing learning experiences (40%) and optimizing study time (33.3%), respondents also emphasize the importance of integrating AI responsibly, as evidenced by suggestions for implementing plagiarism detection software and providing appropriate tools. Overall, these findings underscore the nuanced landscape of AI integration in higher education, where addressing challenges and leveraging the benefits of AI can lead to more effective teaching practices and better student outcomes.

3.3. Students' Questionnaire Results

3.3.1. Analysis of Responses

1) Are you a student at Belhadj Bouchaib University?

All 42 respondents, constituting 100% of the sample, answered affirmatively, indicating that they are students at Belhadj Bouchaib University. This high level of unanimity among respondents underscores the homogeneous nature of the surveyed population in terms of their affiliation with the university.

2) What is your major in Master 1?

In the survey regarding Master 1 majors, 42 respondents provided insights into their academic pursuits. The distribution of their choices reflected a diverse array of interests. Social Sciences emerged as the most popular major, with 10 respondents (23.8% of the total) selecting it. Following closely were Computer Science and English, each chosen by 7 respondents, representing 16.7% of the sample. Engineering was also a notable choice, with 3 respondents (7.1%) indicating it as their major. Other options such as Didactics, English literature and civilization, and Institutional finance were chosen by smaller numbers of respondents, each representing 2.4% or less of the total sample. This distribution highlights

Chapter 3: Data Analysis

the broad spectrum of academic disciplines pursued by Master 1 students at Belhadj Bouchaib University.

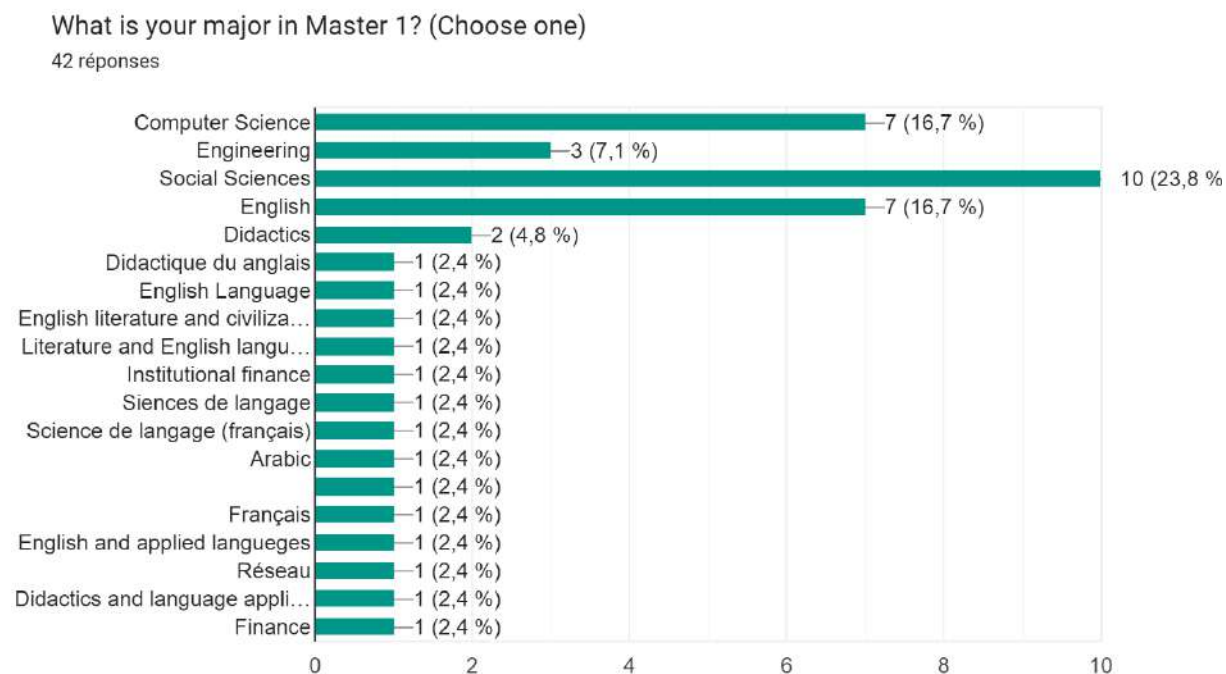


Figure 11 Master 1 Major Selection

3) How often do you use artificial intelligence-based tools or applications in your studies?

Upon examining the frequency of use among the 42 respondents, a nuanced pattern emerges. The majority, constituting 14 individuals or 33.33% of the sample, reported utilizing the activity sometimes, indicating a moderate level of involvement. Simultaneously, 12 respondents, comprising 28.57% of the total, consistently engage in the activity, stating that they always partake in it. Additionally, 10 respondents, accounting for 23.81% of the sample, indicated frequent use, suggesting significant but less consistent involvement. In contrast, a smaller proportion reported rare engagement (4 individuals or 9.52%) or no engagement at all (2 individuals or 4.76%). This breakdown illustrates the varying degrees of participation

Chapter 3: Data Analysis

among respondents, underscoring the diversity of habits and preferences regarding the activity in question.

How often do you use artificial intelligence-based tools or applications in your studies?
42 réponses

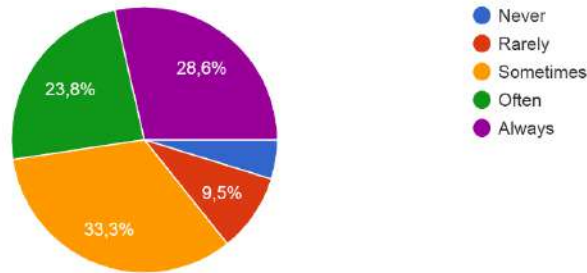


Figure 12 Frequency of AI-Based Tool Use

4) What specific types of artificial intelligence-based tools or applications do you use most often? (Select all that apply)

In the assessment of AI tool/application usage among the surveyed population, a varied landscape emerges. Adaptive learning platforms emerge as the most prevalent, with 23 respondents, representing 54.76% of the sample, utilizing them. Following closely, virtual tutoring systems are utilized by 17 respondents, constituting 40.48% of the total. Content recommendation tools also garnered significant usage, with 12 respondents, comprising 28.57% of the sample, utilizing them. In contrast, a smaller proportion of respondents reported using ChatGPT and Perplexity (2 individuals or 4.76%), and even fewer reported using G50 and Word Bank (1 individual or 2.38%). This distribution underscores the varied adoption rates of different AI tools and applications among respondents, reflecting a diverse landscape of technological integration in their educational practices.

Chapter 3: Data Analysis

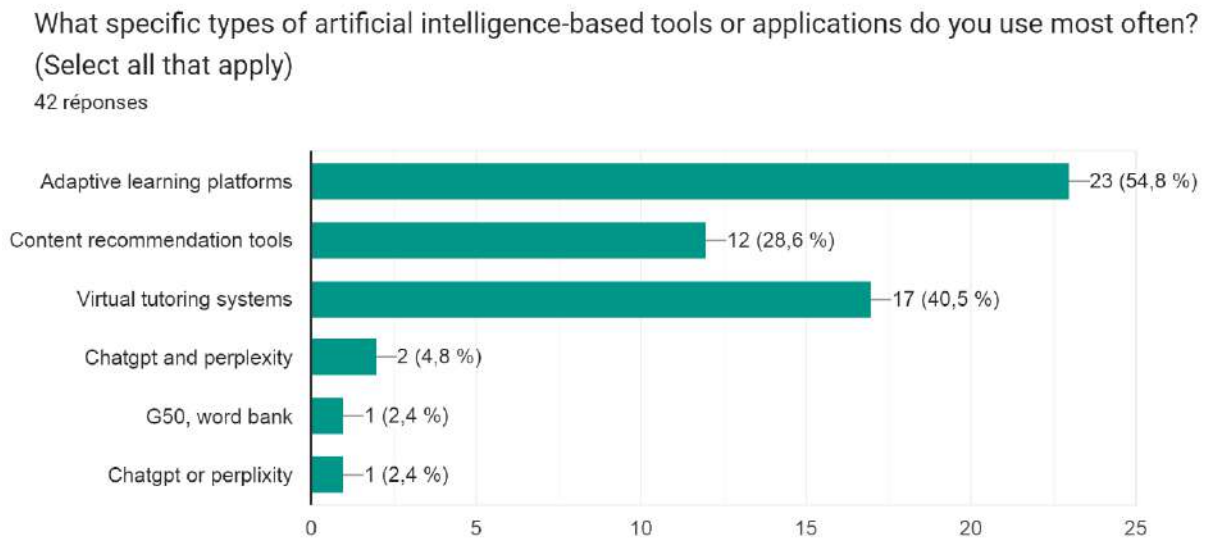


Figure 13 Most Utilized AI-Based Tools/Applications

5) To what extent do you believe the integration of artificial intelligence has improved your learning experience?

Upon examining the improvement levels reported by the respondents, a diverse range of perceptions emerges based on frequency. A small frequency of individuals, comprising 2 respondents or 4.76% of the sample, indicated that they experienced no improvement at all. Slightly more respondents, with a frequency of 6 individuals or 14.29% of the total, reported experiencing only slight improvements. In contrast, a moderate frequency of respondents, constituting 14 individuals or 33.33% of the sample, perceived their improvement to be moderate. Similarly, a significant frequency, with 12 respondents or 28.57%, reported experiencing significant improvement. Additionally, a notable frequency of the sample, represented by 8 individuals or 19.05%, reported experiencing extremely significant improvement. This breakdown underscores the varied perceptions of improvement levels among respondents, indicating a spectrum of outcomes ranging from negligible to highly impactful.

Chapter 3: Data Analysis

To what extent do you believe the integration of artificial intelligence has improved your learning experience?

42 réponses

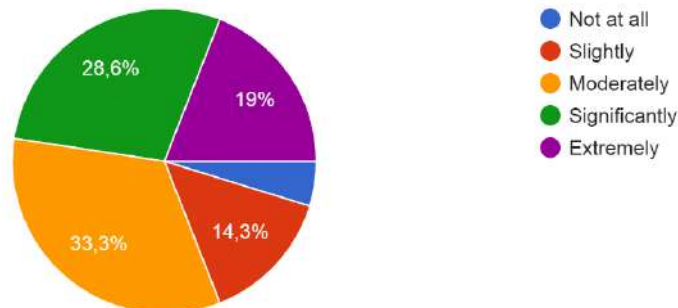


Figure 14 Perception of AI Integration Impact on Learning Experience

6) What do you perceive as the main advantages of using artificial intelligence in higher education? (Select all that apply)

Upon examining the advantages reported by the respondents, a varied landscape emerges based on frequency. Personalized learning was cited by 15 respondents, constituting 35.71% of the sample, indicating its popularity as a perceived benefit. Similarly, enhanced understanding of concepts was noted by 16 respondents, representing 38.10% of the total. Time-saving in completing tasks emerged as a highly prevalent advantage, with a frequency of 27 respondents or 64.29% of the sample reporting it. Improved quality of teaching was also widely acknowledged, with 20 respondents or 47.62% indicating its significance. This breakdown highlights the diverse perceptions of advantages among respondents, reflecting a range of benefits that are valued in educational contexts.

Chapter 3: Data Analysis

What do you perceive as the main advantages of using artificial intelligence in higher education?
(Select all that apply)

42 réponses

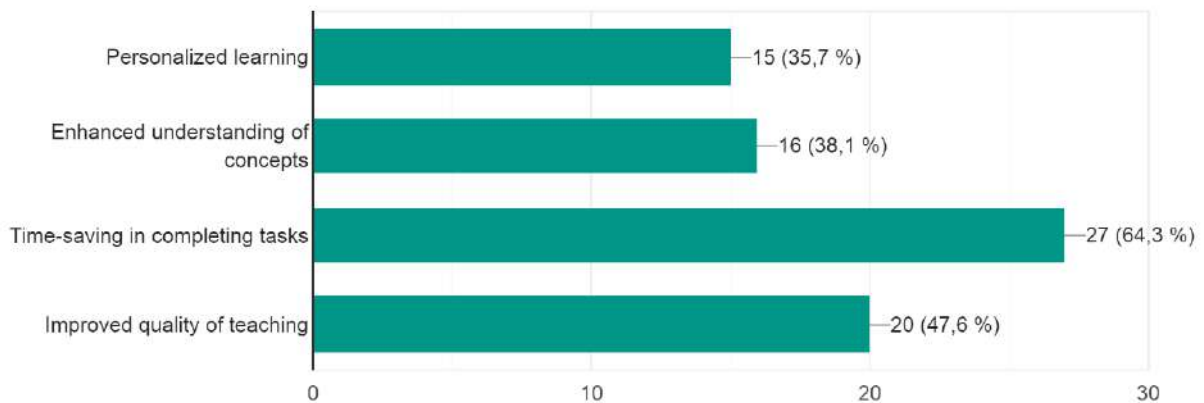


Figure 15 Perceived Advantages of AI in Higher Education

7) What do you perceive as the main challenges or drawbacks of using artificial intelligence in higher education? (Select all that apply)

Upon examining the challenges or drawbacks reported by the respondents, a nuanced picture emerges based on frequency. Excessive reliance on technology was cited by 15 respondents, constituting 35.71% of the sample, highlighting concerns regarding overdependence on digital tools. Risks related to data privacy were noted by 16 respondents, representing 38.10% of the total, indicating a significant awareness of privacy issues in the digital age. Reduction in human interaction emerged as a prominent concern, with a frequency of 22 respondents or 52.38% of the sample, reflecting apprehensions about the erosion of face-to-face communication. Additionally, difficulties adapting to technological changes were reported by 12 respondents, comprising 28.57% of the sample, underscoring the challenges associated with keeping pace with rapid technological advancements. This breakdown illustrates the varied perceptions of challenges or drawbacks among respondents, highlighting multifaceted concerns related to technology integration in educational settings.

Chapter 3: Data Analysis

What do you perceive as the main challenges or drawbacks of using artificial intelligence in higher education? (Select all that apply)

42 réponses

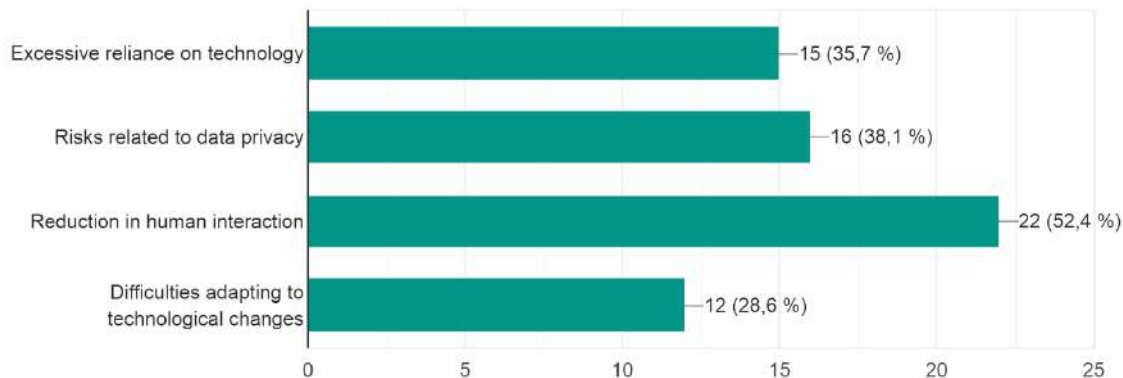


Figure 16 Identified Challenges of AI in Higher Education

8) For what purposes do you primarily use artificial intelligence in your studies? (Select all that apply)

Upon examining the reported purposes of the surveyed individuals, a diverse range of motivations emerges based on frequency. Enhancing understanding of concepts was cited by 20 respondents, constituting 47.62% of the sample, indicating a strong emphasis on leveraging technology for deeper comprehension. Similarly, optimizing study time was noted by another 20 respondents, representing an equal percentage of 47.62%, underscoring the significance of efficiency in academic pursuits. Assisting in problem-solving emerged as a prevalent purpose, with 18 respondents or 42.86% of the total, reflecting the role of technology in facilitating analytical skills. Personalizing learning was also acknowledged by 15 respondents, comprising 35.71% of the sample, indicating a desire for tailored educational experiences. This breakdown highlights the varied purposes driving the adoption of technology in education, reflecting a spectrum of needs and priorities among respondents.

Chapter 3: Data Analysis

For what purposes do you primarily use artificial intelligence in your studies? (Select all that apply)

42 réponses

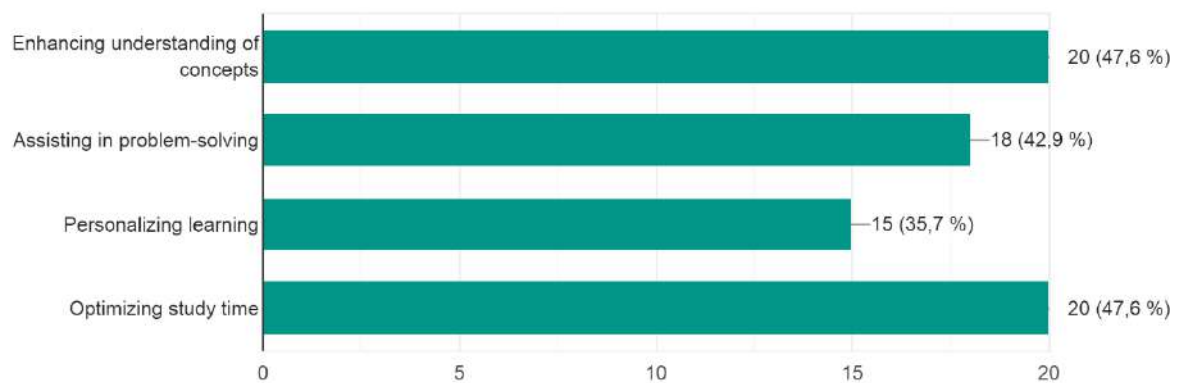


Figure 17 Primary Purposes for AI Use in Studies

9) On a scale of 1 to 5, how do you rate the effectiveness of artificial intelligence-based tools or applications that you use in your studies?

In assessing the effectiveness ratings provided by the respondents, a diverse range of perceptions emerges based on frequency. The least frequent rating was "1 - Not effective at all," with only 1 respondent, constituting 2.38% of the sample, indicating this level of efficacy. Slightly more respondents, with a frequency of 6 individuals or 14.29% of the total, rated the effectiveness as "2 - Slightly effective" or "3 - Moderately effective." The most common rating was "4 - Effective," selected by 17 respondents, representing 40.48% of the sample, followed closely by "5 - Very effective," chosen by 12 respondents or 28.57%. This breakdown underscores the varied perceptions of effectiveness among respondents, reflecting a spectrum of confidence levels in the efficacy of the assessed entity.

Chapter 3: Data Analysis

On a scale of 1 to 5, how do you rate the effectiveness of artificial intelligence-based tools or applications that you use in your studies?

42 réponses

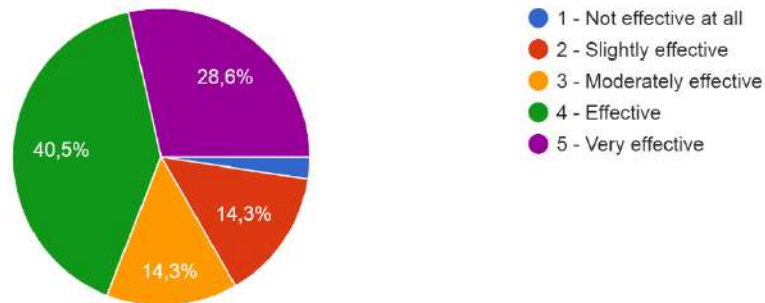


Figure 18 Effectiveness Rating of AI-Based Tools/Applications

10) In your opinion, what additional skills or knowledge should you acquire to better utilize artificial intelligence in your studies? (Select all that apply)

Upon examining the reported additional skills or knowledge by the respondents, a diverse array of capabilities emerges based on frequency. Technical programming skills were cited by 16 respondents, constituting 38.10% of the sample, indicating a significant interest in coding proficiency. Data analysis skills were noted by 13 respondents, representing 30.95% of the total, underscoring the importance of analytical capabilities. Time management skills emerged as a prevalent area of focus, with 26 respondents or 61.90% of the sample reporting its significance, highlighting the value placed on efficient task allocation. Additionally, complex problem-solving skills were acknowledged by 21 respondents, comprising 50.00% of the sample, indicating a strong emphasis on critical thinking abilities. This breakdown illustrates the varied priorities regarding additional skills or knowledge among respondents, reflecting a diverse spectrum of professional development objectives.

Chapter 3: Data Analysis

In your opinion, what additional skills or knowledge should you acquire to better utilize artificial intelligence in your studies? (Select all that apply)

42 réponses

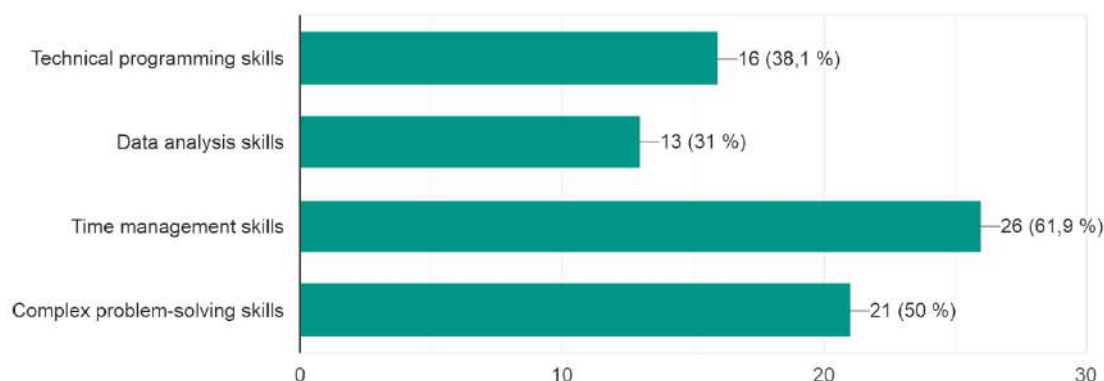


Figure 19 Additional Skills/Knowledge for Better AI Utilization

11) Do you have any suggestions for improving the integration of artificial intelligence in higher education at Belhadj Bouchaib University?

Here's the summary of suggestions for improving the integration of artificial intelligence in higher education at Belhadj Bouchaib University:

- Enhance internet connectivity and provide necessary materials such as computers and smartphones for students to access AI tools effectively.
- Increase awareness among students and teachers about AI tools to maximize their benefits.
- Introduce AI courses or modules across various disciplines to familiarize students with AI concepts, applications, and ethical considerations.
- Create dedicated research centers or labs focused on AI to encourage interdisciplinary collaboration among teachers and students.
- Offer workshops, hackathons, and online courses to enhance students' AI skills, including programming, machine learning, and data analysis.

Chapter 3: Data Analysis

- Implement AI tools for personalized learning experiences and plagiarism detection.
- Provide training programs to EFL teachers to enhance their AI skills and integrate AI into teaching methods.
- Foster partnerships with industry for AI research and development, engage students in AI activities, and facilitate collaboration with international universities and research institutions.

These suggestions aim to leverage the potential of artificial intelligence to enhance teaching, learning, and research at the university.

12) Is there anything else you would like to add regarding the use of artificial intelligence in your Master 1 studies?

Here are additional comments regarding the use of artificial intelligence in Master 1 studies:

- AI can facilitate the learning process but should be used judiciously to avoid potential disadvantages.
- Some suggest using ChatGPT to find resources, while others caution against relying too heavily on AI.
- Hands-on projects and interdisciplinary collaboration are seen as valuable approaches to AI education.
- Some students express satisfaction with their experience with AI in their M1 studies.
- Others emphasize the importance of not relying solely on AI and highlight concerns about cheating and misinformation.
- Some students express interest in specialized tracks within the Master's program focused on specific AI domains.
- Providing advanced articles and research materials can facilitate scientific research.
- Some students express a desire to improve their English language skills.

Chapter 3: Data Analysis

- Overall, there is a mixed perception of AI's impact on learning experiences, with some noting slight improvements.

These insights highlight both the potential benefits and challenges associated with integrating artificial intelligence into Master 1 studies.

3.3.2. Discussion of Results

In analysing the results of the survey regarding the integration of artificial intelligence (AI) in Master 1 studies at Belhadj Bouchaib University, several key findings emerge. Firstly, the data showcases a widespread utilization of AI-based tools among students, reflecting a growing reliance on technology to support various aspects of academic work. This highlights the increasing importance of AI in higher education, with students actively incorporating AI into their learning routines to enhance understanding, optimize study time, and assist in problem-solving.

Secondly, while the majority of students perceive AI integration positively, there are notable challenges and drawbacks identified. Concerns such as excessive reliance on technology, risks related to data privacy, and the reduction in human interaction underscore the complex nature of AI integration in educational settings. These challenges necessitate a nuanced approach to AI implementation, with a focus on addressing ethical considerations and maintaining a balance between technological advancement and human-centric learning experiences.

Lastly, the discussion reveals a desire among students to acquire additional skills and knowledge to better utilize AI in their studies. Technical programming, data analysis, time management, and complex problem-solving skills are identified as essential for leveraging AI technology effectively. This underscores the importance of incorporating AI-related curriculum enhancements and skill development programs to ensure that students are

Chapter 3: Data Analysis

equipped with the necessary competencies to navigate the AI-driven landscape of higher education effectively. Overall, the results of the survey highlight both the opportunities and challenges associated with AI integration in Master 1 studies, calling for a holistic approach that considers the diverse needs and perspectives of students in leveraging AI technology for educational advancement.

3.4. Teacher's Interview Results

In this section, we will present the results obtained from the interview conducted with an EFL professor at the Higher School of Artificial Intelligence in Algiers (Annex 3).

3.4.1. Analysis of the Responses

1) Professional Experience in AI:

What is your professional experience in the field of artificial intelligence or related technologies?

The professor outlines the integration of AI concepts into various English language modules, emphasizing the dual benefit of language proficiency and AI understanding. This approach aligns with the interdisciplinary nature of AI education, providing students with a holistic skill set.

2) Incorporation of AI Teaching:

How do you incorporate the teachings of artificial intelligence into your courses at the National School of Artificial Intelligence in Algiers?

The methodologies employed encompass lectures, interactive discussions, hands-on projects, and real-world case studies. This diverse approach ensures comprehensive learning, combining theoretical knowledge with practical application, such as designing advertisements using AI techniques.

Chapter 3: Data Analysis

3) Teaching Methodologies for AI:

What are the main methodologies you employ to teach artificial intelligence concepts?

By utilizing a combination of lectures, discussions, projects, and case studies, students engage deeply with AI concepts, fostering both theoretical understanding and practical skills. This multifaceted approach caters to different learning styles and enhances comprehension.

4) Impact of AI Curriculum:

In your opinion, how does the presence of an AI-focused curriculum impact the educational landscape at the National School of Artificial Intelligence in Algiers?

The AI-focused curriculum significantly impacts the educational landscape by equipping students with specialized skills relevant to the evolving AI industry. This prepares students to meet industry demands and contribute effectively to technological advancements, highlighting the program's relevance and significance.

5) Student Engagement with AI:

How do students engage with the subject matter of artificial intelligence in your courses?

Students actively engage with AI through participation in discussions, collaborative projects, and practical assignments. This active involvement enhances their understanding of AI concepts and their real-world applications, fostering enthusiasm and motivation.

6) Perceived Benefits of AI Education:

What are the perceived benefits of studying artificial intelligence at the National School of Artificial Intelligence in Algiers?

Benefits of studying AI at the National School of Artificial Intelligence include improved communication skills, access to global AI research, and enhanced career opportunities.

Chapter 3: Data Analysis

Proficiency in English facilitates international collaboration and opens doors to the global AI community.

7) Changes in Student Engagement:

Have you noticed any changes in student engagement or enthusiasm due to the focus on artificial intelligence education?

The focus on AI education has led to increased student engagement and enthusiasm, driven by excitement about AI applications and opportunities for research and projects. This indicates the program's success in motivating and inspiring students.

8) Challenges in AI Education:

What challenges do students typically encounter when studying artificial intelligence?

Students face challenges such as understanding technical terminology, grasping abstract concepts, and applying theoretical knowledge practically. To address these challenges, the professor provides additional support through supplementary materials and mentorship.

9) Assessment of AI Curriculum:

How do you assess the effectiveness of the artificial intelligence curriculum at the National School of Artificial Intelligence in Algiers?

The effectiveness of the AI curriculum is evaluated through student performance, feedback from industry partners, and graduates' success in securing employment or pursuing further studies. This multifaceted assessment ensures the curriculum's alignment with industry needs and students' career readiness.

10) Strategies for Effective Learning:

Chapter 3: Data Analysis

What strategies do you employ to foster effective learning and understanding when studying artificial intelligence?

Strategies for fostering effective learning include personalized guidance, hands-on experiences, peer collaboration, and continuous assessment. These strategies promote active engagement and deeper comprehension of AI concepts among students.

11) Recommendations for Improvement:

As a professor at the National School of Artificial Intelligence in Algiers, what recommendations do you have for further improving the artificial intelligence education program?

Recommendations for enhancing the AI education program include incorporating interdisciplinary projects, fostering international collaborations, and providing opportunities for students to engage with cutting-edge research. These suggestions aim to enrich students' learning experiences and prepare them for diverse career paths.

12) Additional Insights on AI in Education:

Do you have any additional insights or comments regarding the role of artificial intelligence in higher education at our institution?

The professor highlights the role of AI in foreign language education, emphasizing its potential to revolutionize language learning and teaching through innovative tools and methods. This underscores the transformative impact of AI across various educational domains.

3.4.2. Discussion of Results

The professor's responses in the interview shed light on several key aspects of AI education. They provide insights into curriculum design, teaching methodologies, student

Chapter 3: Data Analysis

engagement, assessment practices, and recommendations for improvement. Overall, the discussion highlights a comprehensive approach to AI education at the Higher School of Artificial Intelligence in Algiers, reflecting the professor's expertise and dedication to enhancing the learning experience for students.

Chapter 4: Finding's Discussion

Chapter 4: Findings Discussion

4.1. Introduction

In this chapter, the study's findings are discussed, including a comparison with existing literature to identify convergences and divergences. The implications for higher education, practical applications of the results, and recommendations for educational institutions are also explored. Additionally, the limitations of the study, factors potentially affecting result validity, and suggestions for future research are addressed.

4.2. Comparison with Existing Literature

4.2.1. Comparison of results with previous studies

1) Artificial intelligence in higher education: the state of the field

The systematic review presented in the article "Artificial intelligence in higher education: the state of the field" provides valuable insights into the landscape of AI integration in higher education from 2016 to 2022. Let's compare the key findings of this study with the results outlined in our study on Research Methodology in Artificial Intelligence in Higher Education:

1. Publication Trends:

- The systematic review highlights a significant surge in AI in higher education publications in 2021 and 2022, indicating a growing interest and focus on AI technologies in academia.

- In contrast, our study focuses on a specific study conducted at Belhadj Bouchaib University, delving into the impact of AI on teaching and learning experiences among Master 1 students. While the systematic review provides a broad overview of publication trends, our study offers a more targeted analysis of AI integration within a specific educational context.

2. Global Research Trends:

Chapter 4: Finding's Discussion

- The systematic review notes a shift in global research trends, with China leading in the number of publications related to AI in higher education, surpassing the previous dominance of the United States.

- In comparison, our study concentrates on a single institution, highlighting the efforts to unravel the ways in which AI can enhance teaching methodologies and personalize learning experiences for Master 1 students. The focus is more on a micro-level analysis within a specific educational setting.

3. Subject Domain:

- The systematic review identifies language learning, particularly writing, reading, and vocabulary acquisition, as the most common subject domain for AI in education research.

- In contrast, our study emphasizes the multifaceted advantages of AI integration in higher education, ranging from personalized learning to efficiency gains in task management. The focus is on the benefits perceived by respondents within the context of higher education practices.

4. Primary Usage Codes:

- The systematic review outlines five primary usage codes for AI in higher education: Assessment/Evaluation, Predicting, AI Assistant, Intelligent Tutoring System (ITS), and Managing Student Learning.

- In comparison, our study highlights the advantages of utilizing AI in higher education, such as personalization of learning, improved understanding of concepts, time-saving in task completion, and enhancement of teaching quality. The emphasis is on the perceived benefits of AI integration within the educational setting.

Chapter 4: Finding's Discussion

In conclusion, while the systematic review provides a comprehensive overview of the state of AI in higher education on a broader scale, our study offers a detailed analysis of the impact of AI technologies within a specific educational context at Belhadj Bouchaib University. Both studies contribute valuable insights into the evolving landscape of AI integration in higher education, each focusing on different aspects of research methodology and outcomes.

2) Systematic review of research on artificial intelligence applications in higher education – where are the educators?

Let's compare the findings from the systematic review "Systematic review of research on artificial intelligence applications in higher education – where are the educators?" with the results presented in our study on Research Methodology in Artificial Intelligence in Higher Education:

1. Authorship and Publication Trends:

- The systematic review identifies authors predominantly from the United States, China, Taiwan, and Turkey, with a focus on Computer Science and STEM departments. In contrast, our study does not delve into authorship details but concentrates on the impact of AI on teaching and learning experiences among Master 1 students at Belhadj Bouchaib University.

2. Application Areas of artificial intelligence education:

- The systematic review highlights four major areas of artificial intelligence education applications in academic, institutional, and administrative services: prediction and profiling, intelligent tutoring systems, assessment and evaluation, and adaptive personalization. On the other hand, our study emphasizes the purposes for which AI is primarily used in studies, such as enhancing understanding of concepts, optimizing study time, assisting in problem-solving, and personalizing learning experiences among Master 1 students.

Chapter 4: Finding's Discussion

3. Gaps and Concerns:

- The systematic review points out significant gaps in artificial intelligence education research, including the lack of longitudinal studies, prevalence of descriptive and pilot studies, and the limited use of quantitative methods. It also raises concerns about the absence of critical reflection on pedagogical and ethical implications in artificial intelligence education implementation. In comparison, our study does not specifically address these gaps but focuses on the perceived benefits and challenges associated with AI integration in higher education based on the responses of Master 1 students.

4. Recommendations for Future Research:

- The systematic review advocates for more in-depth research that considers pedagogical, ethical, social, cultural, and economic dimensions of artificial intelligence education. It emphasizes the importance of an educational perspective in technological development and encourages researchers to incorporate explicit theoretical perspectives. In contrast, our study does not provide explicit recommendations for future research but highlights the varied purposes driving the adoption of technology in education among Master 1 students.

In summary, while the systematic review offers a broader perspective on the current landscape of AI applications in higher education and emphasizes the need for a more comprehensive and reflective approach to artificial intelligence education research, our study focuses on specific insights gathered from Master 1 students at Belhadj Bouchaib University regarding the utilization and impact of AI technologies in their academic pursuits. Both studies contribute valuable insights into the evolving role of AI in higher education, each addressing different aspects of research methodology, outcomes, and recommendations for future exploration and development in the field.

3) Artificial intelligence in higher education: the state of the field

Chapter 4: Finding's Discussion

Let's compare the findings from the systematic review "Artificial intelligence in higher education: the state of the field" by Helen Crompton and Diane Burke with the results presented in our study on Research Methodology in Artificial Intelligence in Higher Education:

1. Publication Trends:

- The systematic review notes a substantial increase in AI in higher education publications in 2021 and 2022 compared to previous years, with a shift in research trends from the US to China. In contrast, our study does not provide specific details on publication trends but focuses on the impact of AI on teaching and learning experiences among Master 1 students at Belhadj Bouchaib University.

2. Departmental Contribution:

- The systematic review highlights a transition in the most significant department contributing to artificial intelligence education research from various departments to education. On the other hand, our study does not delve into departmental contributions but concentrates on the purposes for which AI is primarily used in studies among Master 1 students.

3. Focus of Studies:

- The systematic review mentions that undergraduate students were the primary focus of 72% of the studies, particularly in the domain of language learning encompassing writing, reading, and vocabulary acquisition. In comparison, our study focuses on the perceived benefits and challenges associated with AI integration in higher education based on the responses of Master 1 students.

4. Usage Codes for artificial intelligence education:

Chapter 4: Finding's Discussion

- The systematic review identifies five primary usage codes for artificial intelligence education in higher education: Assessment/Evaluation, Predicting, AI Assistant, Intelligent Tutoring System (ITS), and Managing Student Learning. In contrast, our study highlights the varied purposes driving the adoption of technology in education among Master 1 students, such as enhancing understanding of concepts, optimizing study time, assisting in problem-solving, and personalizing learning experiences.

5. Recommendations for Future Research:

- The systematic review suggests areas for future research, including the exploration of new tools such as Chat GPT. In comparison, our study does not provide explicit recommendations for future research but offers insights into the impact of AI technologies on teaching and learning experiences among Master 1 students.

In summary, while the systematic review by Crompton and Burke provides a comprehensive analysis of the state of AI in higher education, highlighting publication trends, departmental contributions, focus areas, and usage codes, our study focuses on specific insights gathered from Master 1 students at Belhadj Bouchaib University regarding the utilization and impact of AI technologies in their academic pursuits. Both studies offer valuable perspectives on the integration of AI in higher education, each addressing different aspects of research outcomes, trends, and recommendations for future exploration and development in the field.

4) Artificial Intelligence for Higher Education Development and Teaching Skills

Let's compare the findings from the paper "Artificial Intelligence for Higher Education Development and Teaching Skills" by Xiaolin Xia and Xiaojun Li with the results presented in our study on Research Methodology in Artificial Intelligence in Higher Education:

1. Role of AI in Higher Education:

Chapter 4: Finding's Discussion

- Xia and Li's paper emphasizes the vital role of AI in fostering the informatization and intelligence of college education, highlighting how AI contributes to the development of higher education and enhances teaching skills. In comparison, our study focuses on the purposes for which AI is primarily used in studies among Master 1 students, such as enhancing understanding of concepts, optimizing study time, and assisting in problem-solving.

2. Student Perception:

- Xia and Li's research reveals that approximately 85% of students perceive a positive outlook for intelligent teaching, affirming the feasibility of AI in higher education. On the other hand, our study does not provide specific data on student perceptions but discusses the varied purposes driving the adoption of technology in education among Master 1 students.

3. Teaching Methods and Skills:

- Xia and Li's paper discusses how AI reshapes teaching goals and methods through knowledge sharing and information-based education innovation, emphasizing the cultivation of students' imagination, creativity, critical thinking, and autonomous learning. In contrast, our study focuses on the impact of AI technologies on teaching and learning experiences among Master 1 students, highlighting benefits and challenges associated with AI integration.

4. Reforms in Education:

- Xia and Li highlight that AI technology's maturity has instigated reforms in education, optimizing teaching skills, transforming evaluation mechanisms, and driving innovation in the coordination of educational resources. They envision a future where AI reshapes evaluation mechanisms and governance structures in higher education, contributing to continuous quality development. In comparison, our study does not delve into the broader implications of AI

Chapter 4: Finding's Discussion

technology maturity but focuses on specific insights from Master 1 students regarding AI integration in their academic pursuits.

In summary, while Xia and Li's paper provides a comprehensive overview of how AI contributes to the development of higher education, enhances teaching skills, and drives reforms in education, our study offers specific insights gathered from Master 1 students at Belhadj Bouchaib University regarding the utilization and impact of AI technologies in their academic experiences. Both studies contribute valuable perspectives on the integration of AI in higher education, addressing different aspects of student perceptions, teaching methods, and the transformative potential of AI technology in educational settings.

4.2.2. Identification of convergences and divergences

Convergences:

- All studies emphasize the growing importance and impact of artificial intelligence (AI) in higher education, highlighting its potential to enhance teaching practices, improve learning outcomes, and optimize educational processes.
- They all recognize the need for ongoing research and exploration in the field of AI in education to address existing gaps, improve understanding, and drive innovation in higher education institutions.
- The studies acknowledge the global trends in AI research in higher education, with a shift in publication dominance from the United States to countries like China, Taiwan, and Turkey, indicating a broader international interest in AI applications in education.
- They all underscore the significance of considering ethical, pedagogical, social, and cultural implications when integrating AI technologies in educational settings, emphasizing the importance of a human-centered approach in deploying AI for teaching and learning.

Chapter 4: Finding's Discussion

Divergences:

- While the systematic reviews focus on the broader landscape of AI in higher education, including publication trends, authorship, and application areas, the study in "our research" provides specific insights into the perspectives and challenges faced by Master 1 students at Belhadj Bouchaib University.
- The studies by Crompton, Burke, Zawacki-Richter, and colleagues delve into the current state of AI in higher education globally, whereas the study by Xia and Li explores the intersection of AI and higher education from a more theoretical and developmental perspective.
- The studies by Crompton, Burke, and Zawacki-Richter emphasize the need for more in-depth research, longitudinal studies, and critical reflection on pedagogical and ethical implications in artificial intelligence education, while the study in "our research" focuses on practical recommendations and student perspectives on AI integration in Master 1 studies.
- The studies by Crompton, Burke, and Zawacki-Richter highlight the dominant application areas of AI in education, such as prediction and profiling, intelligent tutoring systems, and assessment, while the study by Xia and Li provides insights into the evolving skill set required for effective AI utilization in education.

4.3. Implications for Higher Education

4.3.1. Practical applications of the results

Practical applications of the results from the studies on artificial intelligence (AI) in higher education include:

Chapter 4: Finding's Discussion

- **Curriculum Enhancement:** Implementing AI technologies to personalize learning experiences, optimize teaching methodologies, and address the unique needs of Master 1 students.
- **Institutional Transformation:** Identifying key trends, challenges, and opportunities to develop innovative strategies that propel educational institutions towards excellence in the digital era.
- **Skill Development Programs:** Incorporating AI-related curriculum enhancements and skill development programs to equip students with technical programming, data analysis, time management, and problem-solving skills for effective AI utilization.
- **Interdisciplinary Projects:** Enhancing the AI education program by incorporating interdisciplinary projects, fostering international collaborations, and providing opportunities for students to engage with cutting-edge research.
- **Ethical Considerations:** Addressing ethical considerations and maintaining a balance between technological advancement and human-centric learning experiences in AI integration in education.
- **Pedagogical Reflection:** Encouraging researchers and educators to critically reflect on the pedagogical, ethical, social, cultural, and economic dimensions of AI in education to ensure a human-centered approach in deploying AI technologies .
- **Research Endeavors:** Building on the existing literature and gaps identified in AI in higher education research to drive future research initiatives, explore new tools, and advance understanding in the field.
- **Teaching Skills Development:** Exploring the evolving intersection of AI and higher education to enhance teaching skills, adapt to the digital landscape, and elevate educational standards.

Chapter 4: Finding's Discussion

By applying these practical implications, institutions can harness the potential of AI to transform teaching and learning experiences, address challenges, and prepare students for the AI-driven landscape of higher education.

4.3.2. Recommendations for educational institutions

Recommendations for educational institutions based on the findings of the studies on artificial intelligence (AI) in higher education include:

- Foster collaborative partnerships with industry experts and research institutions to stay updated on AI advancements and best practices in educational integration.
- Provide continuous training programs for faculty, staff, and students to enhance their AI literacy, technical skills, and pedagogical competencies.
- Develop and implement clear ethical guidelines and policies for the responsible use of AI technologies in education, ensuring data privacy, transparency, and equity.
- Encourage interdisciplinary approaches that leverage AI technologies to address complex educational challenges and enhance learning outcomes across various disciplines.
- Allocate resources for updating technological infrastructure, acquiring AI tools, and creating supportive environments for seamless AI integration in teaching and learning.
- Involve students, teachers, administrators, and stakeholders in decision-making processes related to AI integration to ensure their perspectives and needs are considered.
- Promote research initiatives to investigate the impact of AI on teaching practices, student learning outcomes, and institutional effectiveness, using evaluation data to inform future AI strategies.

Chapter 4: Finding's Discussion

- Cultivate a culture of innovation and experimentation that encourages teachers and students to explore new AI technologies, pedagogical approaches, and learning experiences to enhance educational quality.
- Ensure that AI integration efforts promote diversity, equity, and inclusion by addressing biases, promoting accessibility, and creating inclusive learning environments for all students.
- Continuously monitor the effectiveness of AI implementations, gather user feedback, and be prepared to adapt strategies based on evolving needs, technological advancements, and educational trends.

By implementing these recommendations, educational institutions can effectively leverage AI technologies to enhance teaching and learning experiences, improve student outcomes, and prepare learners for success in the digital age.

4.4.Limitations of the Study

4.4.1. Factors potentially affecting result validity

In conducting this research on the impact of artificial intelligence in improving higher education, several limitations were encountered that may have influenced the findings and their interpretation.

Firstly, the limited availability of previous studies directly addressing the specific focus of our research was a significant hurdle. While there is a growing body of literature on AI in education, studies specifically examining the impact on Master's level students in higher education were scarce. This limited the ability to compare our findings directly with existing literature and to build on established research frameworks.

Secondly, we faced challenges in data collection. Initially, the response rate from the targeted EFL teachers was lower than anticipated, necessitating a prolonged data collection

Chapter 4: Finding's Discussion

period. This delay resulted in a later start for the data analysis phase, potentially impacting the timeliness and efficiency of the study.

Additionally, the scope of AI tools examined in the study was limited. While we focused on prevalent AI applications such as intelligent tutoring systems and adaptive learning platforms, other emerging AI technologies that might also have significant educational impacts were not included.

Lastly, resource limitations in terms of funding and access to advanced AI tools for empirical testing restricted the depth of practical experimentation and hands-on analysis that could be incorporated into the study. This primarily theoretical and survey-based approach may have missed nuanced insights that practical application and experimentation could provide.

Future research should aim to address these limitations by expanding the scope of study to include a wider range of AI applications, increasing sample sizes and diversity, and securing more robust funding to facilitate comprehensive empirical investigations.

4.4.2. Suggestions for future research

- ❖ Explore the effectiveness of personalized AI-driven learning experiences in improving student engagement, academic performance, and retention rates in higher education settings.
- ❖ Investigate the impact of AI tools on faculty workload, teaching effectiveness, and professional development opportunities to enhance pedagogical practices and student outcomes.
- ❖ Examine the ethical implications of AI integration in education, including issues of data privacy, algorithmic bias, and transparency, to ensure responsible and equitable use of AI technologies.

Chapter 4: Finding's Discussion

- ❖ Evaluate the role of AI in fostering interdisciplinary collaboration, innovation, and creativity among students and EFL teachers across diverse academic disciplines in higher education.
- ❖ Assess the scalability and sustainability of AI implementations in educational institutions, considering factors such as cost-effectiveness, technological infrastructure, and institutional readiness for long-term AI integration.

4.5. Conclusion

In conclusion, this chapter provides a thorough examination of the study's findings, highlighting key comparisons with existing literature, implications for higher education, and limitations of the research. By offering practical recommendations for educational institutions and suggesting areas for future research, this chapter contributes to the ongoing dialogue surrounding the integration of artificial intelligence in higher education. The insights gleaned from this analysis pave the way for informed decision-making and continued advancements in leveraging AI technologies to enhance teaching and learning practices.

General Conclusion

In conclusion, this dissertation has covered the impact of Artificial Intelligence (AI) on higher education. It sought to find out how AI can enhance teaching methods, student learning results, and by how much the alterations in education are probable. Based on the idea that AI enhances teaching and learning for more effective performance, this study found remarkable results, indicating strong influence of AI on education.

Firstly, the research showed that AI can create a fair, effective, and enjoyable learning environment by offering personalized instruction, monitoring student progress, and providing useful insights into student performance. Individual student needs are worked with, helping in improving learning experiences and performances.

By monitoring the progress of students, AI helps teachers to view and give responses to needs in real time to ensure that help and support are given promptly. In this way, the educational environment becomes one that is dynamic and responsive, leading to improvement in student performance.

What is more, the study has discovered that AI provides valuable insights into student performance, helping teachers detect areas where students need more support and adapt their teaching approaches. These insights are necessary for understanding student learning and will be used for better teaching.

In addition, the findings of the study suggest that AI can bring changes into education on account of the new modes of student learning and teachers' teaching. AI technologies support new teaching and interact in learning, stimulating the development of new approaches that fit students of the modern world.

Artificial intelligence also presents new opportunities for educational institutions to become smarter and more effective. It is capable of automating administrative assignments,

streamlining operations, and enabling data-driven decisions to deliver overall efficiency and effectiveness of educational institutions and to move towards a more advanced educational system.

Implying that AI has a remarkable impact on education, the future is promising to facilitate a range of improvements that will make teaching and learning practices continue to evolve.

Bibliography

- Belkassi, K., Ouchene, D., & Zaaf, K. (2022). The usage of AI applications in corporate communication of Algerian public institutions: The Directorate-general of Algeria Telecommunication as case of study. *Aleph*, 9(4), 185-201.
- Capacity, T. (2021, October 18). *History of technology in higher education - Capacity*. Capacity. Retrieved from <https://capacity.com/higher-ed/history/>
- Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, 20(1). <https://doi.org/10.1186/s41239-023-00392-8>
- Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: The state of the field. *International Journal of Educational Technology in Higher Education*, 20, 22. <https://doi.org/10.1186/s41239-023-00392-8>
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Kar, A. K., ... Wright, R. (2023). Opinion paper: “So what if ChatGPT wrote it?” Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>
- GGI Insights. (2023, December 12). How is AI changing education? Revolutionizing personalized learning. Retrieved from <https://www.graygroupintl.com/blog/how-is-ai-changing-education>
- Gouider, I. (2023). The automatic measurement of the lexical complexity of Algerian EFL academic writings: A comparative corpus-based study [Paper presentation]. National Conference on the Uses of Artificial Intelligence as a Guarantee for the Quality of Higher Education and Scientific Research, Algiers University, Algeria.
- Hymel, N. (2023, November 03). The power of data: 8 ways data-driven solutions benefit K-12 schools. *FACTS Management*. Retrieved from <https://factsmgt.com/blog/the-power-of-data-how-data-driven-solutions-benefit-k-12-schools/>

- Kamalov, F., Santandreu Calonge, D., & Gurrib, I. (2023). New era of artificial intelligence in education: Towards a sustainable multifaceted revolution. *Sustainability*, 15(16), 12451. <https://doi.org/10.3390/su151612451>
- Redman, L. V., & Mory, A. V. H. (1923). *The romance of research*. p.10.
- Martínez-Mesa, J., González-Chica, D. A., Duquia, R. P., Bonamigo, R. R., & Bastos, J. L. (2016). Sampling: How to select participants in my research study? *Anais Brasileiros de Dermatologia*, 91(3), 326–330. <https://doi.org/10.1590/abd1806-4841.20165254>
- Maulana Mazharul Haque Arabic and Persian University, Patna. (2022). *Tools used in research* (Course-M.1.education, Semester-4th, Paper-401).
- Mohanty, A., Alam, A., Sarkar, R., & Chaudhury, S. (2021). Design and development of digital game-based learning software for incorporation into school syllabus and curriculum. *Design Engineering*, 8, 4864-4900.
- Moral, R. V., Ycong, S. T., & Misa, G. O. (2023). Emerging trends of blended learning instructional approaches on basic education students' academic achievement: Meta-analytic assessment and theory generation. *ISAR Journal of Arts, Humanities and Social Sciences*. Retrieved from <https://isarpublisher.com/journal/isarjahss>
- Owan, V. J., Abang, K., Idika, D. O., & Bassey, B. A. (2023). Exploring the potential of artificial intelligence tools in educational measurement and assessment. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(8), Article ID em2307. <https://doi.org/10.29333/ejmste/13428>
- Roll, I., & Wylie, R. (2016). Evolution and revolution in artificial intelligence in education. *International Journal of Artificial Intelligence in Education*, 26, 582–599. <https://doi.org/10.1007/s40593-016-0110-3>
- Salavati, S. (2016). *Use of digital technologies in education: The complexity of teachers' everyday practice* (Linnaeus University Dissertations No. 264/2016). Linnaeus University Press.

- Shabiralyani, G., Hasan, K. S., Hamad, N., & Iqbal, N. (2015). Impact of visual aids in enhancing the learning process: Case research - District Dera Ghazi Khan. *Journal of Education and Practice*, 6(19), 226. ISSN 2222-1735 (Paper), ISSN 2222-288X (Online).
- Sheppard, V. (2020). Quantitative, qualitative, & mixed methods research approaches. In *Research methods for the social sciences*. Pressbooks. <https://pressbooks.bccampus.ca/jibcresearchmethods/chapter/3-5-quantitative-qualitative-mixed-methods-research-approaches/>
- Suk, J. (2024, January 02). 10 trends in education technology that will have a major impact in 2023. *Hurix Digital*. Retrieved from <https://www.hurix.com/trends-in-education-technology-that-will-have-a-major-impact/>
- Tsai, C.-C., Cheng, Y.-M., Tsai, Y.-S., & Lou, S.-J. (2023). Impacts of AIOT implementation course on the learning outcomes of senior high school students. *Education Sciences*, 11(2), 82. <https://doi.org/10.3390/educsci11020082>
- Xia, X., & Li, X. (2022). Artificial intelligence for higher education development and teaching skills. *Wireless Communications and Mobile Computing*. <https://doi.org/10.1155/2022/7614337>
- Zarris, D., & Sozos, S. (2023). Educational artificial intelligent chatbot: Teacher assistant & study buddy (Master's thesis, Luleå University of Technology).
- Zawacki-Richter, O., Marín, V. I., Bond, M., & et al. (2019). Systematic review of research on artificial intelligence applications in higher education – Where are the educators? *International Journal of Educational Technology in Higher Education*, 16, 39. <https://doi.org/10.1186/s41239-019-0171-0>

Appendix n°1

University: Belhadj Bouchaib University

Department: English Department

Specialization: Field of Didactics and Applied Languages

Theme: The Impact of Artificial Intelligence in Improving Higher Education: Case Study of Master 1 Students

Conducted by: Chabane Wiame, Ouggad Khadidja Soraya

Supervised by: Dekhil Anfal

Questionnaire for Teachers

Please take a moment to participate in this questionnaire, which explores the impact of artificial intelligence (AI) on higher education, specifically focusing on teachers at Belhadj Bouchaib University.

Your responses are anonymous and will be used solely for academic research. Your input is highly valuable to us, so please answer each question thoughtfully and honestly.

Thank you for your participation!

1. Are you an EFL teachers at Belhadj Bouchaib University?

- Yes
- No

2. How long have you been teaching at Belhadj Bouchaib University?

Less than 1 year

- 1-3 years
- 4-6 years
- 7-10 years
- More than 10 years

3. What subject(s) do you primarily teach?

4. How often do you use artificial intelligence-based tools or applications in your teaching?

- Never
- Rarely
- Sometimes
- Often
- Always

5. What types of artificial intelligence-based tools or applications do you use most frequently?
(Select all that apply)

- Adaptive learning platforms
- Content recommendation tools
- Virtual tutoring systems
- Other, please specify: _____

6. To what extent do you believe that the integration of artificial intelligence has improved your teaching?

- Not at all
- Slightly
- Moderately
- Significantly
- Extremely

7. What do you consider to be the main advantages of using artificial intelligence in higher education? (Select all that apply)

- Personalization of learning
- Improved understanding of concepts

- Time-saving in task completion
- Enhancement of teaching quality
- Other, please specify: _____

8. What do you consider to be the main challenges or disadvantages of using artificial intelligence in higher education? (Select all that apply)

- Excessive reliance on technology
- Risks related to data privacy
- Reduction in human interaction
- Difficulties in adapting to technological changes
- Other, please specify: _____

9. For what purposes do you primarily use artificial intelligence in your teaching? (Select all that apply)

- Enhancing understanding of concepts
- Assisting in problem-solving
- Personalizing learning experiences
- Optimizing study time
- Other, please specify: _____

10. On a scale of 1 to 5, how would you rate the effectiveness of artificial intelligence-based tools or applications that you use in your teaching?

- 1 - Not effective at all
- 2 - Slightly effective
- 3 - Moderately effective
- 4 - Effective
- 5 - Very effective

11. What additional skills or knowledge do you believe you should acquire to better leverage artificial intelligence in your teaching? (Select all that apply)

- Technical programming skills

- Data analysis skills
- Time management skills
- Complex problem-solving skills
- Other, please specify: _____

12. Do you have any suggestions for improving the integration of artificial intelligence in higher education at Belhadj Bouchaib University?

Thank you very much for taking the time to complete this questionnaire. Your responses are valuable for our research.

Appendix n°2

University: Belhadj Bouchaib University

Department: English Department

Specialization: Field of Didactics and Applied Languages

Theme: The Impact of Artificial Intelligence in Improving Higher Education: Case Study of Master 1 Students

Conducted by: Chabane Wiame, Ouggad Khadidja Soraya

Supervised by: Dekhil Anfal

Questionnaire for Students

Please take a moment to participate in this questionnaire, which explores the impact of artificial intelligence (AI) on higher education, specifically focusing on Master 1 students at Belhadj Bouchaib University.

Your responses are anonymous and will be used solely for academic research. Your input is highly valuable to us, so please answer each question thoughtfully and honestly.

Thank you for your participation!

1. Are you a student at Belhadj Bouchaib University?

- Yes
- No

2. What is your major in Master 1? (Choose one)

- Computer Science
- Engineering
- Social Sciences
- Other, please specify: _____

3. How often do you use artificial intelligence-based tools or applications in your studies?

- Never

- Rarely
- Sometimes
- Often
- Always

4. What specific types of artificial intelligence-based tools or applications do you use most often? (Select all that apply)

- Adaptive learning platforms
- Content recommendation tools
- Virtual tutoring systems
- Other, please specify: _____

5. To what extent do you believe the integration of artificial intelligence has improved your learning experience?

- Not at all
- Slightly
- Moderately
- Significantly
- Extremely

6. What do you perceive as the main advantages of using artificial intelligence in higher education? (Select all that apply)

- Personalized learning
- Enhanced understanding of concepts
- Time-saving in completing tasks
- Improved quality of teaching
- Other, please specify: _____

7. What do you perceive as the main challenges or drawbacks of using artificial intelligence in higher education? (Select all that apply)

- Excessive reliance on technology

- Risks related to data privacy
- Reduction in human interaction
- Difficulties adapting to technological changes
- Other, please specify: _____

8. For what purposes do you primarily use artificial intelligence in your studies? (Select all that apply)

- Enhancing understanding of concepts
- Assisting in problem-solving
- Personalizing learning
- Optimizing study time
- Other, please specify: _____

9. On a scale of 1 to 5, how do you rate the effectiveness of artificial intelligence-based tools or applications that you use in your studies?

- 1 - Not effective at all
- 2 - Slightly effective
- 3 - Moderately effective
- 4 - Effective
- 5 - Very effective

10. In your opinion, what additional skills or knowledge should you acquire to better utilize artificial intelligence in your studies? (Select all that apply)

- Technical programming skills
- Data analysis skills
- Time management skills
- Complex problem-solving skills
- Other, please specify: _____

11. Do you have any suggestions for improving the integration of artificial intelligence in higher education at Belhadj Bouchaib University?

12. Is there anything else you would like to add regarding the use of artificial intelligence in your Master 1 studies?

Thank you very much for taking the time to complete this questionnaire. Your responses are valuable for our research.

Appendix n°3

Interview: Exploring the Impact of Artificial Intelligence on Higher Education Enhancement at The National School of Artificial Intelligence

1. What is your professional experience in the field of artificial intelligence or related technologies?
2. How do you incorporate the teachings of artificial intelligence into your courses at the National School of Artificial Intelligence in Algiers?
3. What are the main methodologies you employ to teach artificial intelligence concepts?
4. In your opinion, how does the presence of an AI-focused curriculum impact the educational landscape at the National School of Artificial Intelligence in Algiers?
5. How do students engage with the subject matter of artificial intelligence in your courses?
6. What are the perceived benefits of studying artificial intelligence at the National School of Artificial Intelligence in Algiers?
7. Have you noticed any changes in student engagement or enthusiasm due to the focus on artificial intelligence education?
8. What challenges do students typically encounter when studying artificial intelligence?
9. How do you assess the effectiveness of the artificial intelligence curriculum at the National School of Artificial Intelligence in Algiers?
10. What strategies do you employ to foster effective learning and understanding when studying artificial intelligence?
11. As a professor at the National School of Artificial Intelligence in Algiers, what recommendations do you have for further improving the artificial intelligence education program?
12. Do you have any additional insights or comments regarding the role of artificial intelligence in higher education at our institution?

Summary

This dissertation examines the transformative role of Artificial Intelligence (AI) on higher education by evaluating its influence on Master's level learning experiences, administrative efficiency, and equity. The study employed student and teacher surveys, along with interviews with EFL professors from AI-driven schools. The research highlights AI's ability to personalize learning for Master's students, streamline administrative tasks for efficiency gains, and foster inclusivity by addressing diverse learning needs. These insights underscore AI's potential to reshape educational practices towards more adaptive and equitable frameworks.

ملخص

يتطرق هذا البحث لاستكشاف دور الذكاء الاصطناعي في التعليم العالي من خلال تقييم تأثيره على تجارب التعلم لطلاب الماجستير وكفاءة الإدارة الإدارية. تم استخدام استبيانين لكل من الطلاب و الاساتذة من اجل هذه الدراسة ، بالإضافة إلى مقابلة مع أساتذة اللغة الإنجليزية كلغة أجنبية في المدرسة العليا للذكاء الاصطناعي. تسلط نتائج البحث الرئيسية الضوء على قدرة الذكاء الاصطناعي على تخصيص عملية التعلم لطلاب الماجستير، وتبسيط المهام الإدارية لتحقيق كفاءة أعلى، وتعزيز شمولية التعليم من خلال معالجة احتياجات التعلم المتنوعة. حيث تبرز هذه الأخيرة إمكانيات الذكاء الاصطناعي في تغيير الممارسات التعليمية نحو إطارات أكثر تكيفًا وإنصافًا.

Résumé

Cette dissertation examine le rôle transformateur de l'intelligence artificielle (IA) sur l'enseignement supérieur en évaluant son influence sur les expériences d'apprentissage des étudiants de niveau master, l'efficacité administrative et l'équité. Des questionnaires ont été employés dans l'étude pour les étudiants et les enseignants, ainsi qu'un entretien avec une professeure d'Anglais langue étrangère dans une école basée sur l'IA. Les principales

conclusions mettent en lumière la capacité de l'IA à personnaliser l'apprentissage pour les étudiants de master, à simplifier les tâches administratives pour des gains d'efficacité, et à promouvoir l'inclusion en répondant aux besoins d'apprentissage diversifiés. Ces résultats soulignent le potentiel de l'IA pour remodeler les pratiques éducatives vers des cadres plus adaptatifs et équitables.