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**SCIENCES OF LANGUAGE**

# MASTER DISSERTATION

**The Role of Artificial Intelligence in Enhancing English as a Foreign Language Learners' Motivation in Electronic Learning**

**The case of Master 1 Students of English at Mohamed Khider University of Biskra**

Dissertation Submitted to the Department of Foreign Languages as a Partial Fulfillment of the Requirements for a Master Degree in Sciences of Language

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**Academic year: 2024 - 2025**

## DECLARATION

**I, Nedjla Sahnoun**, do hereby declare that the present dissertation entitled:

**"The Role of Artificial Intelligence in Enhancing English as a Foreign Language Learners' Motivation in Electronic Learning: The case of Master 1 Students of English at Mohamed Khider University of Biskra"** is my own original work and has not previously been submitted for any academic degree or diploma at this or any other university or institution.

I also declare that all sources and references used in this work have been properly acknowledged and cited in accordance with academic standards.

Nedjla Sahnoun

Biskra

June 2025

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## *DEDICATION*

*First and foremost, I thank Allah for granting me the strength, patience, and guidance to complete this work. Without his blessings, none of this would have been possible.*

*This dissertation is dedicated with heartfelt gratitude to the most important people in my life.*

***To my dear parents**, for their endless love, unwavering support, and constant encouragement—thank you for believing in me every step of the way.*

*To my beloved **sisters**, my only **brother**, and my precious **niece** and **nephews**, for their inspiration, and the joy they bring into my life—your presence has been a true blessing throughout this journey.*

*To my dearest **friend**, who stood by me through the challenges and triumphs—your support has meant more than words can express.*

***This work is as much yours as it is mine.***

***Nedjla Sahnoun***

## ABSTRACT

This study investigates how Artificial Intelligence (AI) can boost student motivation in online learning settings, particularly among Master 1 students of English at Mohamed Khider University of Biskra. As various AI tools such as chatbots, intelligent tutoring systems, and learning analytics become more common in educational contexts, the research explores their impact on motivation in learning English as a Foreign Language (EFL). A qualitative research approach was utilized, consisting of a semi-structured questionnaire directed at students and semi-structured interviews conducted with instructors. The findings suggest that AI can positively influence learner motivation by providing personalized feedback, encouraging self-directed learning, and enhancing engagement. However, the study also points out several challenges, such as low digital skills, overreliance on technology, and diminished human interaction. Practical suggestions are offered for both educators and students to make effective use of AI in online learning. Although this research provides valuable insights, it is limited by a small sample size, its reliance on self-reported information, and the rapidly changing landscape of AI technologies. In summary, the research adds to the understanding of how AI can facilitate motivation in language learning within the context of higher education.


***Keywords:*** Artificial Intelligence, student motivation, e-learning, English as Foreign Language (EFL), personalized feedback

## LIST OF ABBREVIATION

**AI**: Artificial Intelligence

**E-learning**: Electronic Learning

**ICT**: Information and Communication Technology

**EFL**: English as a Foreign Language

**LMS**: Learning Management System

**ITS**: Intelligent Tutoring System

**MOOCs**: Massive Open Online Courses

**SDT**: Self-Determination Theory

**ARCS**: Attention, Relevance, Confidence, Satisfaction

**NLP**: Natural Language Processing

**XAI**: Explainable Artificial Intelligence

**SDL**: Self-Directed Learning

**PLATO**: Programmed Logic for Automatic Teaching Operations

**STEM**: Science, Technology, Engineering, and Mathematics

**RH:** Research Hypothesis

**RQ:** Research Question

## LIST OF TABLES

## LIST OF FIGURES

**TABLE OF CONTENT**



# General Introduction

# Chapter One

# Artificial Intelligence and Enhanced E-learning

# Chapter Two

# Motivation

# Chapter Three

# Field Work

# General Introduction

## Introduction

In our rapidly changing and interconnected world, technology has created new ways to live, work, and learn. Electronic Learning (E-learning) is one of the biggest changes in education. With the widespread availability of the internet and digital devices, e-learning has transformed the way knowledge is accessed, opening doors to learners of all backgrounds and ages (Bates, 2019, pp. 1–5; UNESCO, 2022).

E-learning creates a completely new learning environment that needs different skills to succeed (Anderson et al., 2001, pp. 2–3). It can be seen both as computer-assisted learning and as a pedagogical approach that focuses more on student-centered and collaborative learning. Early developments in e-learning focused on computer-assisted learning, where part or all of the learning content was delivered digitally. More recently, its teaching strategies have gained more importance. E-learning is any type of learning that uses electronic devices and communication systems to support teaching and learning, whether they are connected to a network or not. (Garrison, 2017, pp. 1–4; Means et al., 2013, pp. 3–6)

Motivation is one of the most important factors in foreign language teaching and learning. It is the inner drive that pushes someone to reach their goals (Dörnyei and Ushioda, 2009, p.61). Foreign language learning can be a challenging task, especially for students who lack motivation. Motivation plays a key role in keeping students engaged, helping them not to give up, and improving their overall success. It is influenced by many things, like a person's character, culture, environment, and past experiences (Dörnyei and Ryan, 2015, p. 72).

Higher education is very important for the development of a country, as universities serve as centers of knowledge and culture. E-learning has become an essential component of higher education, and has helped improve learning. In Algeria, students are using e-learning more and more because technology and digital tools are easier to access (Mohamed and Herzallah, 2021, pp. 508–509).

With the rise of Artificial Intelligence (AI), e-learning platforms now use smart tools that can personalize lessons, give instant feedback, and boost students' motivation (Luckin et al., 2022, pp. 18–21; Chen et al., 2021, pp. 8–10). AI can help solve motivation problems by creating learning paths that fit each student, making learning more fun and interactive, and offering automatic help when needed (Hwang et al., 2020, p. 3).

## 1. Background of the Study

In recent years, higher education around the world, including in Algeria, has changed significantly due to the rise of e-learning. Universities have adopted online platforms to make learning more flexible, accessible, and engaging (Bates, 2019, pp. 1–25; UNESCO, 2022). Institutions like Biskra University have integrated e-learning in response to technological advances and the need for modern teaching methods.

However, the effectiveness of e-learning depends greatly on students' ability to adapt and their level of motivation. Motivation is especially important; as it helps learners stay committed and overcome challenges (Dörnyei and Ushioda, 2009, pp. 1–30; Dörnyei and Ryan, 2015, pp. 25–60). While e-learning can support motivation through interactive, student-centered approaches, its actual impact on Algerian EFL learners remains underexplored.

Students must balance learning a new language with adapting to online education. While some benefit from the flexibility of e-learning, others struggle with low motivation and limited classroom interaction (Garrison, 2017, pp. 10–40). Recent developments in Artificial Intelligence (AI) offer possible solutions by providing personalized learning, instant feedback, and intelligent support systems (Huang et al., 2023, pp. 112-115).

This study explores how AI can improve motivation among EFL learners in e-learning environments, focusing on Master 1 students of English at Biskra University. The goal is to provide insights for improving digital learning experiences in Algerian higher education.

## 2. Problem Statement

The rise of e-learning has brought many new possibilities to education, especially in improving learner motivation and engagement (Means et al., 2020, pp. 12–15). However, its effectiveness in English as Foreign Language (EFL) learning, particularly in culturally specific settings, is still not fully understood (Kessler, 2018, pp. 10-13). While e-learning offers flexibility and interactive tools, many students face challenges staying motivated, especially when traditional classroom interaction is reduced (Garrison, 2017, pp. 15–45).

Artificial Intelligence (AI) is now being used in e-learning to provide personalized support, real-time feedback, and engaging learning experiences (Luckin et al., 2022; Chen, Xie, and Hwang, 2020, para. 4). These tools have the potential to increase motivation among students by adapting to their needs (Hwang et al., 2021, p. 10). However, issues such as limited digital skills, lack of teacher training, access to technology, and cultural attitudes toward AI may reduce its effectiveness (Selwyn, 2019, pp. 98–102; Bates, 2019, pp. 80–110). Students must not only adapt to e-learning but also face motivational challenges in language learning (Dörnyei and Ushioda, 2021, pp. 10–35; Zimmerman, 2013, pp. 20-40).

This study addresses the need to understand how AI-based tools can support or hinder their motivation and aims to explore ways to improve AI-integrated e-learning environments in Algerian higher education.

## 4. Significance of the Study

This study holds considerable significance in several key areas related to English as a Foreign Language (EFL) education, motivation theory, and the integration of Artificial Intelligence (AI) in e-learning environments, particularly within the Algerian higher education context.

Firstly, the research contributes to a deeper understanding of how AI technologies can effectively enhance EFL learners' motivation, a crucial factor in language acquisition and learner success. By investigating the motivational impacts of AI-driven tools and feedback systems, the study offers valuable insights into the ways technology can support and transform traditional language learning methodologies.

Secondly, the findings provide practical implications for educators, curriculum designers, and policymakers by highlighting best practices and challenges in implementing

AI-enhanced e-learning platforms. This can help inform strategies to improve learner engagement and motivation, optimize instructional design, and foster autonomous learning among Master 1 students of English and potentially other learner populations.

Thirdly, this study fills a research gap in the Algerian educational context, where limited empirical work exists on the intersection of AI, e-learning, and learner motivation in EFL settings. The results could serve as a foundation for future research, encouraging further exploration of AI's role in addressing motivational challenges and enhancing educational outcomes in similar contexts.

Finally, the study promotes awareness of the psychological and technological challenges associated with AI integration, such as AI anxiety and algorithmic biases, enabling stakeholders to develop more ethical, inclusive, and learner-centered e-learning environments.

Overall, this research advances both theoretical knowledge and practical applications, contributing to the ongoing evolution of language education in the digital age.

## 5. Research Questions

Through the present study we intend to answer the following questions:

**RQ1:** How effective is AI-enhanced e-learning in increasing the motivation of Master 1 students of English at Biskra University in the context of EFL learning?

**RQ2:** In what ways do Interactive and Personalized AI featues in e-learning platforms shapes students' motivation and engagement?

## 6. Research Hypothesis

As a first attempt to answer our research questions, we hypothesize that:

**RH:** Effective implementation of AI-based e-learning tools in higher education with Master 1 students, will lead to boost their motivation.

## 7. Aims of the Study

This study aims to investigate the role of Artificial Intelligence (AI) in enhancing the motivation of English as Foreign Language (EFL) learners in an e-learning context. Specifically, it seeks to:

- Assess the overall effectiveness of AI-enhanced e-learning in boosting the motivation of Master 1 students of English at Biskra University.
- Explore how AI-driven e-learning tools, such as gamification and multimedia content, influence both intrinsic and extrinsic motivation among EFL learners.
- Examine the impact of AI-powered task design, interactivity, and personalization on student engagement and motivational levels in online learning environments.

## 8. Methodology

The research utilizes a qualitative approach to investigate the role of AI in enhancing English foreign language learners' motivation in e-learning among Master 1 students of English at Mohamed Khider Biskra University. To collect data, it uses two primary tools: a semi-structured questionnaire for students and a semi-structured interview for teachers. The questionnaire allows for an in-depth exploration of students' experiences and perceptions regarding AI-driven e-learning tools and their impact on their motivation, while the interview provides insights from teachers who use e-learning and AI in their instruction.

### 8.1. The Choice of Method

This study adopts an exclusively qualitative approach, selected for its ability to provide in-depth insights into students' and teachers' perspectives on the role of artificial intelligence in enhancing motivation within e-learning environments. The research utilizes two main qualitative tools: a semi-structured questionnaire for students and semi-structured interviews for teachers. This methodology enables a comprehensive understanding of how AI-driven tools influence learner engagement and motivation.

### 8.2. Population and Sampling

#### 8.2.1. Population

The target population for this research includes Master 1 students of English enrolled in e-learning courses at Mohamed Kheider Biskra University, along with their instructors. These individuals are selected because of their direct exposure to AI and e-learning environments, making them well-positioned to provide relevant insights.

#### 8.2.2. Sample Size

- **Students:** Thirty (N0 30) students from the overall population of 172 will be selected to ensure a sufficient amount of data for meaningful analysis.
- **Teachers:** Five (N0 5) teachers will be randomly selected to share their experiences and perceptions of AI's role in fostering learner motivation in online education.

#### 8.2.3. Sampling Technique

A random sampling method will be employed to ensure objectivity and diversity in the participant selection. All eligible students and teachers have an equal chance of being selected, with no consideration given to demographic or academic factors. This technique helps eliminate bias and enhances the reliability of the findings.

### 8.3. Data Collecting Tools

To achieve the objectives of this research, the following data collection tools will be used:

- **Student Questionnaire:** A semi-structured questionnaire designed to explore students' motivation levels and perceptions of e-learning.
- **Teacher Interviews:** Semi-structured interviews will be conducted with selected teachers to gain deeper insight into their experiences using AI-powered tools in digital education, and their views on how such tools affect students' motivation.

### 8.4. Data Analysis

Since this study employs a qualitative approach, the collected data from both the student questionnaires and teacher interviews will be analyzed using thematic analysis. This method allows for an in-depth examination of recurring themes and patterns related to the role of AI in enhancing EFL learners' motivation in e-learning.

## 9. Structure of the Study

This dissertation is divided into three chapters. Chapter one explores Artificial Intelligence and enhanced E-learning by defining e-learning and artificial intelligence, reviewing their historical development, and analyzing formats such as adaptive platforms and

intelligent tutoring systems. It discusses key teaching approaches and components like automated feedback and interactive content while examining how AI impacts EFL learner motivation, particularly in Algeria, including cultural and technical barriers and proposed solutions. Chapter two focuses on motivation in AI-supported e-learning, defining intrinsic and extrinsic motivation and applying theories like Self-Determination and Goal Orientation. It uses the ARCS model to analyze how AI tools affect engagement and identify motivational boosters (e.g., adaptive feedback) and challenges (e.g., AI anxiety). It also contextualizes these within Algerian realities. Chapter three presents the study's practical findings based on student questionnaires and teacher interviews, evaluating how AI influences motivation and offering recommendations to enhance e-learning practices.

# Chapter One

## Artificial Intelligence and Enhanced E-learning

## Introduction

This chapter examines the role of Artificial Intelligence (AI) in E-Learning, focusing on EFL education. It begins by defining key concepts and tracing the evolution of AI in E-Learning. Next, it explores different AI-driven learning models and teaching methodologies, such as personalized and gamified learning. The discussion then highlights essential components of AI-enhanced systems and their impact on EFL learner motivation. Finally, it addresses challenges and opportunities in the Algerian context and broader E-Learning barriers, proposing AI-powered solutions.

### 1.1. Definition of E-Learning and Artificial Intelligence

E-learning is defined as using information and communication technology (ICT) to support online, web-based, or computer-assisted learning experiences. This definition highlights e-learning's role in transforming traditional educational methods by providing flexible access to learning resources and facilitating interactions between students and educators (Sangrà et al., 2012, p. 152).

The integration of artificial intelligence (AI), which simulates human intelligence to perform tasks like learning, reasoning, and problem-solving (Russell and Norvig, 2021, p. 1), has significantly improved e-learning by facilitating personalized instruction, automated assessments, and adaptive learning settings (Luckin et al., 2016, pp. 6–12; Woolf et al., 2013, p. 41–50).

Research findings consistently emphasize e-learning's ability to overcome traditional constraints of time and location, ultimately enhancing knowledge exchange and collaboration between learners and instructors (Kokoç, 2019, pp. 2–4; Tallent-Runnels et al., 2006, pp. 95–100). The incorporation of AI-based tools, including intelligent tutoring systems and virtual assistants, has also improved student participation by offering immediate feedback and customized learning experiences (VanLehn, 2011, pp. 200–210; Ma et al., 2014, pp. 912–914).

E-learning has gained prominence in educational settings, particularly during the COVID-19 pandemic, when institutions shifted to online platforms to maintain educational continuity (UNESCO, 2022; Hodges et al., 2020). Some highlight its ability to make education fairer by giving everyone access to learning materials, no matter where they live (Khan, 2005, pp. 1–22; Bates, 2019, pp. 20–50). Others focus on the technology side, especially AI, which has helped make e-learning more popular by improving how lessons are

delivered, tracked, and supported (Baker and Inventado, 2014, p. 62; Zawacki-Richter et al., 2023, p. 10). Additionally, E-learning also encourages students to learn on their own, with teachers guiding rather than just giving all the information (Ally, 2008, p. 31; Anderson and Dron, 2011, p. 87). Empirical evidence suggests that e-learning not only enhances academic achievement but also transforms the educational landscape by offering more ways to learn and keeping students more involved (Bernard et al., 2014, pp. 87–122; Means et al., 2010, p. 18; Tamim et al., 2011, pp. 4–10).

Different theories help explain how e-learning works. For example, the Community of Inquiry (Col) framework highlights the importance of social, thinking, and teaching interactions in making online learning effective (Garrison et al., 2000, p. 88). Connectivism, a theory by Siemens (2005, pp. 3–5), says that learning happens through networks and connections, stressing the need to find and link information from different sources. AI-based learning fits this idea by using data and machine learning to create personalized learning paths for students. Additionally, the theory-based design framework combines teaching methods, learning strategies, and technology—like AI tools—to develop effective and meaningful learning experiences (Koedinger, Corbett, and Perfetti, 2012, pp. 758–760; Molenaar, 2022).

E-learning theory also uses ideas from cognitive science, like cognitive load theory, which aims to improve learning by designing tools that manage how much information the brain can handle (Sweller et al., 2019, pp. 400–405; Chen, Wang, and Chen, 2020, p. 102). AI-powered learning systems support this by adjusting content difficulty to match each student's ability, helping them understand and remember better.

### 1.2. Historical Development of E-learning and AI Integration

E-learning has grown into a powerful way to learn, starting with early distance education and now using AI-powered digital tools. It began in the 19th century when Sir Isaac Pitman taught shorthand by mailing lessons to students (Holmberg, 1995, pp. 5–20). This early method set the stage for today's tech-based learning.

In the 20th century, several innovations transformed education. In 1924, Sidney Pressey created the first teaching machine, which B.F. Skinner improved in 1954 to support active learning (Skinner, 1958, p. 140). By 1925, Iowa University offered radio-based courses, and by the 1930s, phones and televisions were used for teaching (Saettler, 2004, pp. 98–100). These early technologies paved the way for more interactive learning methods.

In the 1960s, computer-assisted learning began with the Programmed Logic for Automatic Teaching Operations (PLATO), one of the first platforms to include forums and instant messaging (Bitzer, Lichtenberger, and Braunfeld, 1961, pp. 157–161).

The introduction of personal computers in the 1980s, especially Apple's Macintosh in 1984, made digital learning more accessible (Levy, 1984, pp. 181–204). At the same time, artificial intelligence started being used in education through adaptive systems like SCHOLAR (Carbonell, 1970, pp. 191–195) and GUIDON (Clancey, 1983, pp. 8–15), which offered personalized instruction and decision support.

The 1990s were a turning point with the growth of the Internet and CD-based learning. The World Wide Web made multimedia educational content globally accessible (Berners-Lee, 1999, pp. 10–40), and AI developments introduced tools like automated essay scoring and intelligent tutoring systems such as e-rater (Burstein et al., 1998, pp. 206–210).

In the 21st century, Learning Management Systems (LMS) like Moodle (Dougiamas and Taylor, 2003, p. 171) and Blackboard improved online education (Siemens, 2013, p. 7). The growth of Massive Open Online Courses (MOOCs) in 2012 made education more accessible through platforms like edX (Daniel, 2012, p. 2-4); Breslow et al., 2013, pp. 13–25). Mobile learning (m-learning) also became popular, focusing on accessibility and flexibility.

The COVID-19 pandemic accelerated e-learning adoption, as institutions moved to online platforms (Hodges et al., 2020). AI played a critical role in this transition, supporting virtual classrooms, automated grading, and personalized learning recommendations (Zawacki-Richter et al., 2019, p. 20). However, challenges such as the digital divide and differences in student engagement showed areas for improvement.

Today, AI is transforming e-learning with adaptive learning, intelligent tutoring systems, and real-time feedback (Luckin et al., 2016, pp. 13–35).

This study explores how AI-powered e-learning affects motivation in Master 1 students of English at Biskra University, focusing on its impact on engagement, teaching effectiveness, and language learning in EFL.

## 1.3. Types of E-learning

E-learning can be delivered through various formats, each designed to meet specific learning objectives and learner needs. Below are the main types of e-learning, including synchronous and asynchronous learning, blended learning, flipped classrooms, and Massive Open Online Courses (MOOCs), highlighting their features, benefits, and challenges in modern educational contexts.

### 1.3.1. Synchronous E-Learning

Synchronous e-learning involves real-time interactions between instructors and students through digital platforms. This format allows participants to engage in live discussions, lectures, and collaborative activities. According to Skylar (2009, p. 22), synchronous learning encourages engagement and interaction by replicating traditional classroom dynamics, allowing students to receive immediate feedback and clarification. Similarly, Hrastinski (2008) emphasizes that synchronous communication enhances learners' sense of community and motivation, making it particularly effective for complex topics that require direct interaction. The interactive nature of synchronous e-learning supports a sense of community and enables dynamic exchanges of information among participants (p. 52).

### 1.3.2. Asynchronous E-Learning

Asynchronous e-learning provides a self-paced learning experience, where students can access recorded lectures, discussion forums, and various digital resources anytime. This form allows learners to engage with the material without the constraints of scheduled class times. Research indicates that asynchronous learning is beneficial for general training that does not target a specific group, such as soft skills or management training (Hrastinski, 2008, p. 53). It utilizes various media formats, such as emails, blogs, and online courses, allowing students to learn independently and revisit content as needed (Means et al., 2010, p. 18).

### 1.3.3. Blended Learning

Blended learning combines traditional face-to-face instruction with online components. This approach leverages the strengths of both methods to create a more comprehensive educational experience. Studies show that blended learning can include various combinations of offline and online courses, independent study, and collaborative learning activities (Graham, 2006, p. 5). This mixed approach offers flexibility while maintaining the benefits of direct instructor interaction.

### 1.3.4. Flipped classroom

A flipped classroom is an educational strategy that enhances student participation by having learners study material at home and focus on problem-solving during class sessions (Bishop and Verleger, 2013, pp. 1–2). Unlike traditional teaching, where students first encounter new material in class, the flipped model allows them to acquire foundational knowledge beforehand, with instructors facilitating its application through interactive activities (Lage, Platt, and Treglia, 2000, pp. 31–33). This student-centric approach fosters engagement, cooperation, and critical thinking (Zainuddin and Perera, 2017, p.1–12)

Technology plays a crucial role by enabling online discussions, digital research, and access to recorded lessons (Bates, 2019, pp. 60–80). The benefits of this model include enhanced learning, increased engagement, improved interaction, and more regular instructor feedback (Means et al., 2010, p. 15). However, challenges such as unequal access to technology and students' varying levels of preparedness can affect its effectiveness (Talbert, 2017, p. 12).

The flipped classroom allows students to review lessons at their own pace and engage in interactive class activities like discussions and role-playing. This approach supports independent learning and enables teachers to provide tailored feedback (Hung, 2015; Lee and Wallace, 2017, pp. 4–6).

### 1.3.5. Massive Open Online Courses (MOOCs)

Massive Open Online Courses (MOOCs) are digital learning platforms that deliver educational content worldwide, typically at minimal or no cost. Leading providers like Coursera, edX, Udacity, and FutureLearn partner with prestigious universities to offer diverse subjects, making quality education accessible to anyone with internet access (Pappano, 2012).

A significant advantage of MOOCs is their ability to accommodate large numbers of participants at the same time. These courses incorporate instructional videos, interactive quizzes, peer-graded tasks, and discussion boards to encourage collaborative learning. Many also provide accredited certificates, boosting career advancement opportunities (Breslow et al., 2013, pp. 14–18).

MOOCs are divided into two types: xMOOCs, which follow a traditional instructor-led format with automated grading, and cMOOCs, which prioritize community-driven knowledge sharing (Downes, 2008, p. 2). Despite their flexibility and inclusivity, MOOCs struggle with low completion rates and a lack of individualized support. To mitigate these challenges, specific platforms now employ AI-powered solutions for personalized feedback and adaptive instruction (Luckin et al., 2016, pp. 52–55; Liyanagunawardena, Adams, and Williams, 2013, pp. 210–213).

## 1.4. AI-applications in E-learning

Artificial Intelligence (AI) has changed e-learning by making it more advanced, automated, and personalized. AI systems adjust to each learner's needs, track progress, and improve content to boost engagement and learning. This makes education more interactive, accessible, and effective. Below are the main types of AI-driven e-learning shaping today's education.

### 1.4.1. Adaptive learning platforms

Adaptive learning platforms employ artificial intelligence (AI) to tailor educational experiences to the specific behavior, progress, and performance of each student. In contrast to traditional teaching methods, which present the same material to all learners, adaptive systems adjust the level of difficulty, pacing, and instructional approach to suit individual needs. This customized method enhances comprehension and keeps learners actively engaged (VanLehn, 2011, pp. 200–210; Aleven et al., 2016, pp. 522–560).

A central feature of these systems is their ability to track student performance in real-time. AI continuously observes learning progress and detects problem areas. It also delivers content matched to each learner's strengths and areas for improvement. Additionally, the system provides automatic recommendations, such as videos, practice tasks, or readings, and applies predictive analytics to anticipate learning obstacles, enabling timely and targeted teacher intervention (Luckin et al., 2016, pp. 36–55; Koedinger et al., 2012, pp. 5–9).

Notable examples of adaptive learning technologies include Knewton (currently under Pearson), which creates customized learning routes using AI (Luckin et al., 2016, p. 42); DreamBox Learning, an interactive math platform that adapts instruction based on learner input (Pane et al., 2014); and Smart Sparrow, which leverages AI analytics to support learning in higher education settings (Lodge et al., 2018, pp. 45–48).

The advantages of adaptive learning systems are considerable. They enhance learner engagement by aligning with each student's pace, providing focused support for those experiencing difficulties, and assisting educators in using data-driven insights to strengthen educational outcomes (Molenaar and Knoop-van Campen, 2018, pp. 404–405).

### 1.4.2. Intelligent Tutoring System (ITS)

Intelligent Tutoring Systems (ITS) function similarly to human tutors by providing personalized guidance, feedback, and assistance in problem-solving. These systems utilize artificial intelligence to assess student responses, detect misunderstandings, and give corrective explanations in real time. By adjusting teaching methods to each learner's behavior, ITS helps students understand better and learn more effectively (VanLehn, 2011, pp. 200–210).

Key features of ITS include interactive learning sessions, where the system engages students in a dialogue by asking follow-up questions and giving hints. It also provides real-time feedback to quickly correct mistakes with clear explanations. Additionally, ITS uses context-aware help by responding based on past student interactions and adjusting problem difficulty based on how well the student is doing (D'Mello and Graesser, 2012, pp. 6–8).

Well-known examples of ITS include Carnegie Learning's MATHia, which employs AI to personalize mathematics instruction (Koedinger et al., 1997, pp. 31-33; Ritter et al., 2007, pp. 250–253); AutoTutor, an AI-based tutoring system that utilizes natural language processing to engage learners in interactive conversations (Graesser et al., 2014, p. 376); and ALEKS (Assessment and Learning in Knowledge Spaces), an adaptive learning system for mathematics and science education (Falmagne et al., 2006).

The benefits of ITS are considerable, as they simulate one-on-one tutoring to improve learning effectiveness, provide individualized support for students struggling with difficult topics, and build problem-solving skills through guided interactions (VanLehn, 2011, pp. 200–210; Ma et al., 2014, pp. 905–910).

### 1.4.3. AI-Enhanced Learning Management Systems (LMS)

AI-enhanced Learning Management Systems (LMS) have changed e-learning by using artificial intelligence to improve course management and personalize learning experiences. These systems analyze student data to suggest courses, automate tasks, and improve the learning experience (Luckin et al., 2016, pp. 44–48; Zawacki-Richter et al., 2019, p.20)

Key features of AI-powered LMS include AI-driven course recommendations that create personalized learning paths based on student behavior and performance, and automated grading and assessment analysis, where AI helps check assignments and quizzes, giving instant feedback (Klašnja-Milićević et al., 2010; Pardo et al., 2016, pp. 85–90; Dikli, 2006, pp. 15–25).

They also use predictive analytics to spot students who may need help early on, and AI content tools to suggest useful articles, videos, and exercises (Jayaprakash et al., 2014, p. 7-14).

Notable examples of AI-enhanced LMS include Blackboard Learn, which leverages AI to analyze student engagement and suggest learning strategies (Dawson et al., 2019, pp. 1–3); Moodle, which supports AI plugins for automation and analytics (Al-Ajlan and Zedan, 2008, pp. 60–62); and Brightspace Insights, which utilizes AI-driven analytics to personalize teaching (Arnold and Pistilli, 2012, pp. 267–268; Means et al., 2013, pp. 7-10).

The benefits of AI-enhanced LMS are significant, as they help teachers manage courses more easily, provide students with a more personalized and engaging learning experience, and enhance overall learning efficiency through automation (Zawacki-Richter et al., 2019, p. 20; UNESCO., 2021).

### 1.4.4. Virtual assistant and Chatbots

AI-powered virtual assistants and chatbots are now widely used in education because they provide instant help to students. They can answer questions, assist with scheduling, and even act as tutors. These tools help teachers by reducing their workload while making learning materials more accessible to students (Winkler and Soellner, 2018, p. 1–40).

One of their key benefits is offering 24/7 support, so students can get quick answers anytime. They also give automated feedback on assignments and guide students through their work. Additionally, they help with time management by organizing study plans and tracking

deadlines. Many of these assistants support both voice and text commands, making them easy to use on different devices (Hwang et al., 2021, p. 6; Wollny et al., 2021, p. 6).

Well-known AI chatbots, such as those studied by Kuhail et al. (2023, pp. 6–9), provide students with instant support outside class hours. These chatbots answer questions, send deadline reminders, and assist with academic tasks, which helps maintain student engagement and encourage independent learning (Kuhail et al., 2023, pp. 7–10; Okonkwo and Ade-Ibijola, 2021, pp. 5–9).

The advantages of these tools are clear—they provide fast assistance, reduce the need for constant teacher involvement, improve student interaction, and support self-paced learning (Luckin, 2018, pp. 85–112; Zawacki-Richter et al., 2019, p. 22).

### 1.4.5. AI-Powered Assessment and Feedback Systems

AI-powered assessment and feedback systems are changing how students are evaluated by automating grading, analyzing written responses, and delivering real-time feedback. These advanced tools improve objectivity, efficiency, and accuracy in assessing student work, thereby reducing teachers' workload while enhancing the learning experience (Zawacki-Richter et al., 2019, p. 21; Shermis and Burstein, 2013, p. 10).

Key features of AI-powered assessment systems include automated essay scoring, where AI evaluates and grades written assignments based on language and structure (Shermis and Burstein, 2013, p. 10), and plagiarism detection, which ensures academic honesty by identifying instances of copied content (Foltýnek et al., 2020, p. 2). Additionally, AI tools can check spoken answers by looking at language use, which helps in speaking and language tests (Xi, Higgins, Zechner, and Williamson, 2008, p. 4). These systems also enhance personalized learning by giving feedback and insights to help students improve their performance (González-Calatayud et al., 2021, pp. 2-4).

Notable examples of AI-powered assessment tools include Grammarly, which gives feedback on grammar, style, and clarity (Dembsey, 2017, pp. 37–42); E-rater by ETS, an AI-based system for automated essay scoring (Burstein et al., 2004, p. 30); and Write and Improve by Cambridge, which helps language learners improve their writing using AI (Ranalli et al., 2016, pp. 15–22).

The benefits of these technologies are significant, as they save teachers time by automating grading (Dikli, 2006, pp. 15–20) and providing students with instant and detailed feedback (Luckin et al., 2016, pp. 45–50).

## 1.5. AI-Powered Approaches and Methodologies in E-Learning

In the evolving landscape of education, particularly within e-learning environments, several approaches have emerged to enhance student motivation and engagement.

### 1.5.1. Behaviorist approach and AI Adaptation

In online education, the behaviorist approach focuses on helping students reach clear learning goals through structured activities and assessments (Ertmer and Newby, 2013, p. 45). Learning is seen as successful when students meet expected outcomes that match the course objectives (Ally, 2008, p. 27). This theory encourages using specific stimuli to prompt learners to show desired behaviors, proving that learning has occurred (Skinner, 2005; Pavlov, 2010, pp. 137–139). Common behaviorist strategies include setting clear goals (Dick, Carey, and Carey, 2015, pp. 40–60), breaking content into small steps (Gagné, Wager, Golas, and Keller, 2005, pp. 50–70), and using frequent practice, rewards, and feedback (Filsecker and Hickey, 2014, p. 137; Van der Kleij et al., 2015, pp. 480–485). Positive reinforcement, such as praise or points, motivates learners to behave in ways that help them achieve their goals (Sailer et al., 2016, pp. 153–155). Learners associate actions with results, which strengthens learning.

However, behaviorism has limitations, especially for tasks requiring critical thinking or creativity, as it often overlooks mental processes (Siemens, 2005, pp. 4–5). It may also reduce intrinsic motivation, as learners focus more on rewards or avoiding punishment than on enjoying the subject, leading to disengagement over time (Ryan and Deci, 2000, pp. 56–58; Noels et al., 2000, pp. 59–61). Still, behaviorist strategies remain useful for EFL learners. Clear expectations and regular feedback help keep students motivated (Lightbown and Spada, 2013, pp. 112–114).

AI can strengthen this approach by tailoring rewards, adjusting feedback based on performance, and keeping learners engaged through gamified features and adaptive learning paths. For these EFL students, AI-based e-learning can provide effective repetition and reinforcement while making learning more interactive and motivating (Woolf et al., 2013, p. 41- 50). By combining AI with behaviorist methods, e-learning platforms can better support motivation and language learning outcomes for Master 1 students at Mohamed Khider Biskra University.

### 1.5.2. Constructivist Approach in AI-Driven Learning

The constructivist approach emphasizes active learning, where students build their own understanding through interaction with content, peers, and their learning environment (Vygotsky, 1978, p. 79; Jonassen, 1999, pp. 215–217). This approach is particularly relevant in AI-driven e-learning environments, as it fosters engagement through problem-solving tasks, collaborative projects, and adaptive learning experiences. AI-powered platforms can enhance constructivist learning by providing interactive simulations, real-time feedback, and personalized learning pathways, allowing EFL learners to engage more deeply with language acquisition (Luckin, 2018, pp. 113–142).

Research indicates that constructivist learning environments lead to higher levels of intrinsic motivation among students, as they develop a sense of ownership over their learning (Çetin-Dindar, 2016, pp. 243–245; Ryan and Deci, 2017, pp. 233–235). Additionally, a study by Zawacki-Richter et al. (2019, p. 20) found that e-learning platforms incorporating AI-driven interactive elements, such as chatbots, adaptive assessments, and gamified tasks, significantly enhance student motivation by making the learning process more engaging and dynamic. For learners, AI-based constructivist approaches can create immersive and interactive experiences, strengthening motivation and improving language proficiency (Hwang et al., 2020, p. 3).

### 1.5.3. Collaborative Learning Approach and AI Tools

Collaborative learning promotes peer interaction and group work, enhancing student motivation (Slavin, 2014, pp. 785–791; Springer et al., 1999, pp. 30–35). By fostering a sense of community in AI-enhanced environments, students benefit from shared experiences and socially shared regulation of learning (Järvelä et al., 2014).

AI-powered tools, such as intelligent tutoring systems (Walker et al., 2013, pp. 33–61), automated discussion facilitators (Graesser et al., 2014, p. 376), and algorithmic group formation (Ounnas et al., 2009, p. 44) optimize collaboration by pairing learners effectively. While ITS traditionally support individual learning (Kulik and Fletcher, 2016, pp. 43–45), recent research shows they can enhance group engagement when combined with collaborative features (Holstein et al., 2019, p. 9).

Studies confirm that collaborative learning boosts motivation through knowledge co-construction (Webb et al., 2019, pp. 176–186). AI-driven feedback (Shute, 2008, p.153–155) and virtual teaching assistants (Goel and Polepeddi, 2016, p. 4) improve communication and

performance. For EFL learners, AI tools like adaptive chatbots (Fryer, Nakao, and Thompson, 2018, p. 281) and personalized language systems (Xu et al., 2021, pp. 5–10) increase engagement through interactive support.

### 1.5.4. Self-Directed Learning (SDL) Approach with AI Assistance

Self-Directed Learning (SDL) encourages learners to take charge of their education, promoting independence and internal motivation (Knowles, 1975, pp. 7–28; Garrison, 1997, p. 18). AI-powered e-learning platforms support SDL by offering personalized learning paths (Luckin, 2018, pp. 143–170), smart tutoring systems (Woolf, 2010, p. 15), and feedback tailored to each learner's needs (Hwang et al., 2020, p. 3). These tools help EFL learners track their progress, spot areas for improvement, and get recommendations that keep them motivated and learning effectively.

Research shows that SDL motivates students who like to learn independently (Loyens et al., 2008, pp. 416–419). Learners with strong internal motivation benefit even more when AI tools support their learning with personalized strategies, leading to better results (Huang et al., 2023, pp. 127-128) ; Hwang et al., 2020, p. 4). For EFL learners, AI-supported SDL creates a more engaging and independent learning experience, boosting motivation and language skills through customized, tech-enhanced learning (Kohnke et al., 2023, pp. 170–177).

### 1.5.5. Personalized Learning Approach through AI

Personalized learning refers to adjusting lessons to meet individual needs and preferences. In AI-driven e-learning environments, adaptive technologies personalize learning by analyzing student performance, adjusting content difficulty, and recommending resources that align with learners' interests and goals. This level of customization is particularly beneficial for EFL learners, as AI can adapt lessons to their proficiency level, learning style, and areas needing improvement. For example, empirical studies support tools like Grammarly's AI-powered writing feedback, which has been shown to improve students' writing accuracy (Koltovskaia, 2020, pp. 7–10), while apps like ELSA Speak use speech recognition to provide adjusted pronunciation practice, leading to measurable gains in speaking skills (Dizon and Tang, 2020, pp. 265–270). These features ensure a more engaging and motivating English language learning experience (Hwang et al., 2020, p. 4).

Research indicates that when learners perceive content as relevant to their goals, they exhibit higher motivation (Yang and Liu, 2021). Additionally, studies on AI chatbots in language learning, such as those used in Duolingo, demonstrate that adaptive interaction significantly increases learner engagement (Xu et al., 2021, pp. 7–12). Similarly, Memrise's spaced repetition algorithm has been empirically validated to enhance vocabulary retention (Settles and Meeder, 2016, pp. 1848–1858). By integrating these AI tools into personalized learning, EFL learners experience a more dynamic and responsive educational journey, fostering sustained motivation and improved language proficiency (Luckin et al., 2016, pp. 48–52).

### 1.5.6. AI-Driven Gamification in E-Learning

Digital learning platforms are increasingly using game-like features to improve learning. These strategies, especially with artificial intelligence, are very effective for teaching English to non-native speakers. Modern e-learning systems use rewards like points, badges, and rankings, along with adjustable difficulty levels, to create engaging learning experiences that fit individual needs (Dichev and Dicheva, 2017, pp. 3–5; Yudintseva, 2015, para. 3).

Studies show that game-inspired elements help students engage more with course material. A study by Sailer and Homner found that using these techniques improved participation and satisfaction (2020, pp. 7–8). Educational psychologists have found that these systems tap into natural human desires for achievement and recognition, leading to better learning outcomes (Ryan and Deci, 2000, pp. 54–57; Hamari, Koivisto, and Sarsa, 2014, pp. 3025–3034). For students learning English, smart tutoring systems that include conversation tools, pronunciation feedback, and custom assessments keep learners motivated while giving them timely feedback (Kohnke, 2022, pp. 479–484; Zou et al., 2021, p. 760).

Some advanced systems combine these rewards with simulations, where language learners can engage in interactive exercises, voice-controlled tasks, and storytelling. These immersive activities help develop language skills and higher-level thinking (Divekar et al., 2021, pp. 2338–2346). Educational games use machine learning to adjust content difficulty based on how well the learner is doing, ensuring the experience is challenging yet achievable (Hwang et al., 2015, p. 15). Research shows that using motivational design with interactive gameplay leads to better learning retention and engagement (Deterding et al., 2011, pp. 12–14). Tracking progress, recognizing milestones, and providing performance feedback helps

students stay committed and understands the material better (Deci et al., 2001, pp. 42–45; Kapp, 2012, Chapter 3).

These technological innovations help create dynamic digital classrooms that inspire learners and accelerate their language skills. Teachers can also use data from these platforms to improve their teaching methods, leading to better educational results (Luckin, 2018, pp. 171–200; Holmes, Bialik, and Fadel, 2019, pp. 151–180).

## 1.6. Key Components of AI-Enhanced E-learning Systems

Motivation is a critical factor in successful e-learning, particularly for English Foreign Language (EFL) learners (Dörnyei and Ushioda, 2011, pp. 1–25). Artificial Intelligence (AI) can significantly shape this motivation by improving aspects such as personalized content, adaptive feedback, learner autonomy, and interactive social features (Luckin et al., 2016, pp. 48–52; Zawacki-Richter et al., 2019, p. 23). Engaging AI-driven materials can spark learners' interest, while intelligent feedback systems help track progress (Hwang et al., 2020, p. 4). AI-powered adaptive learning platforms offer students greater control, enhancing intrinsic motivation, while AI-facilitated social interactions enrich collaborative learning experiences (Chassignol et al., 2018, pp. 21–22).

### 1.6.1. AI and Engaging Content

For EFL learners, staying motivated relies on having engaging and relevant content that suits their language needs. AI boosts motivation by customizing learning materials based on each learner's skill level and preferences. Research by Kohnke et al. (2023, p. 3) shows that AI-based interactive tools increase motivation, especially when the content is useful and related to real-life language use. Wang et al. (2013, pp. 120–130) also found that students who are more motivated academically are more ready to engage with e-learning, highlighting the role of AI in keeping learners interested.

For Master's students in English at Mohamed Khider University of Biskra, AI can provide personalized exercises, instant feedback, and content that reflects their culture, helping to increase motivation and learning efficiency.

### 1.6.2. AI-Powered Feedback and Reward Systems

Regular feedback and reward systems are keys for motivating learners in e-learning, especially in EFL settings where personalized support is important. AI-based tools, like

automated writing checkers or speech recognition systems, offer quick, personalized corrections on grammar, pronunciation, and fluency, helping students track their progress (Burstein et al., 2004, p. 33; Dizon and Tang, 2020, pp. 4–7). AI-powered reward systems, such as digital badges for language achievements or leaderboards for friendly competition, can also motivate learners by encouraging positive behaviors (Sailer and Homner, 2020, pp. 6–8; Huang, Hew, and Lo, 2018, p. 1116).

Studies show that AI-driven feedback improves learning attitudes and results, helping students learn languages more effectively (Warschauer and Grimes, 2008, pp. 22–36; Koltovskaia, 2020, pp. 7–10).

### 1.6.3. AI and Learner Autonomy

AI supports EFL learners' autonomy by providing personalized, self-paced learning paths and tools like automated writing feedback (Luckin, 2018, pp. 143–170; Hockly, 2018, pp. 85–86). Research shows that when students choose AI-recommended topics or adjust lesson difficulty, their engagement rises (Xu et al., 2021, pp. 8–12). For students, AI platforms (like Duolingo or ChatGPT tutors) can tailor content (e.g., academic writing exercises or accent training), supporting Kohnke et al.'s (2023, pp. 170–177) findings that self-directed, AI-supported strategies improve learning. However, AI has limitations in addressing sociolinguistic and cultural nuances, requiring human support (Godwin-Jones, 2022, p. 17).

### 1.6.4. AI-Facilitated Social Interaction

Social interaction is key for EFL motivation, and AI can help in collaborative learning. AI chatbots or virtual peers can simulate conversation practice (Fryer et al., 2018, p. 280; Dizon, 2017, pp. 815–822), while natural language processing (NLP) tools can analyze group discussions and offer feedback (Rosé et al., 2008, pp. 250–260). AI-based forums or peer-matching algorithms can create a sense of community, supporting Kohnke et al.'s (2023, pp. 174–176) focus on peer support. Research shows that AI features like real-time translation in multicultural teams boost motivation and performance (Shadiev and Yu, 2022, p. 7), making them vital for EFL e-learning platforms.

## 1.7. The Connection between AI-Enhanced E-Learning and EFL Learner Motivation

AI has transformed the link between e-learning and learner motivation. Unlike traditional systems, AI-driven platforms create personalized, adaptive learning experiences (Luckin, 2018, pp. 57–84; Ryan and Deci, 2000, pp. 54–57; Zawacki-Richter et al., 2019, p.19). By analyzing proficiency gaps, adjusting difficulty levels, and tracking engagement, these systems boost motivation in new ways. For EFL learners, platforms like Duolingo use gamification to increase extrinsic motivation with rewards while promoting intrinsic motivation through personalized learning paths (Vesselinov and Grego, 2016; Rosell-Aguilar, 2017).

### 1.7.1. Overcoming Motivational Barriers with AI

Traditional e-learning often struggles to keep learners engaged, but AI-powered tools offer new ways to solve this problem (Hwang et al., 2020, pp. 3-4).Sentiment-aware virtual peer networks reduce feelings of isolation (McQuiggan, Robison, and Lester, 2008, pp. 490–499), while behavioral nudging algorithms encourage task completion (Yeomans and Reich, 2017). These advancements are based on established motivational theories, providing a solid theoretical foundation (Ryan and Deci, 2000, pp. 54–67; Keller, 2010, pp. 43–74). These innovations are based on established motivational paradigms:

Self-Determination Theory (SDT) is applied in AI-driven learning environments by fostering:

- **Autonomy** through adaptive learning pathways (Holstein et al., 2019, p. 11),
- **Competence** via real-time skill tracking (Bull and Kay, 2016, p. 295), and
- **Relatedness** via AI-supported social learning tools (Schroeder et al., 2013, pp. 18–22).

Similarly, the ARCS Model (Keller, 2010) is also implemented through AI by enhancing:

- **Attention** with engaging, interactive content (Mayer, 2022, p. 60),
- **Relevance** through personalized learning materials (Bernacki and Walkington, 2018, p. 870),
- **Confidence** with tailored feedback and support (Shute, 2008, pp. 154–155), and
- **Satisfaction** using intrinsic rewards like gamification (Hamari et al., 2014, pp. 3026–3029).

### 1.7.2. Cultural Considerations in AI-Enhanced EFL Learning

While AI has great potential to boost motivation in learning (Luckin et al., 2016, pp. 48–52; Zawacki-Richter et al., 2019, p. 16), its effectiveness depends on the local context, especially cultural and language differences (Chiu et al., 2023, p. 09; Liu et al., 2021, pp. 5617–5622). In Algeria, AI must be adapted to fit the local infrastructure, the multilingual environment, and teaching styles. With 88% of people using smartphones (GSMA Intelligence, 2023), mobile-friendly AI tools are key for access (Kukulska-Hulme et al., 2017, pp. 220–222). Also, Rouabah (2022, pp. 25–30) stresses that Algeria's trilingual system (Arabic-French-English) requires AI to use L1-aware natural language processing (NLP) to handle code-switching and support smooth language transitions.

## 1.8. Challenges and Barriers in E-Learning: AI-Powered Solutions for EFL Learners

While e-learning offers significant benefits for education, its implementation in Algeria faces substantial technical and pedagogical challenges. This section outlines these barriers and proposes AI-powered solutions tailored to address them.

### 1.8.1. Technical Barriers

A study by Bellatrache and Aloutti (2020, pp. 264–276) surveyed Algerian university stakeholders, identifying critical technical obstacles to e-learning adoption.

**a) Limited Internet Access**

**Findings:**

Poor internet connectivity was the main technical issue, with 60.72% of participants saying it seriously affects e-learning at the university.

**AI-based Solution:**

Design AI-powered e-learning systems with offline features. These systems can save data and sync it when the internet is available, so students can access materials and submit work even with unstable connections (Mahafdah, Bouallegue, and Bouallegue, 2024; Melo, 2024, pp. 1–9).

**b) Lack of Devices**

**Findings:**

About 35.71% of respondents said that not having access to modern devices from their institutions is a barrier.

**AI-based solution:**

Use AI-powered cloud desktops that work on basic devices like smartphones or older computers, reducing the need for expensive hardware while still providing full functionality (Saraf, Oaks, Gruver, Joseph, and Reiser, 2025).

c) **Platform Limitations**:

**Findings:**

Over half of the respondents (53.57%) said that modern e-learning platforms like Moodle and Google Classroom are missing in Algerian universities.

**AI-based solution:**

Create AI-powered platforms that combine tools like Moodle and Google Classroom to provide personalized learning, instant feedback, and real-time progress tracking (Melo, 2023, para. 3).

d) **Technical Support Shortages**:

**Findings:**

About 42.85% of participants said system maintenance and updates are lacking. Interestingly, the same number disagreed that there's a shortage of trained staff, hinting at a gap between institutional support and users' actual experiences.

**AI-based solution:**

Use AI chatbots to provide 24/7 support, helping users fix issues, reset passwords, and use platforms more easily (Melo, 2023, para. 3).

e) **Cybersecurity Risks**:

**Findings:**

Although first seen as a human issue, 46.44% of participants agreed that low awareness of cybersecurity risks also hinders e-learning.

**AI-based solution:**

Set up AI systems that can spot and respond to cybersecurity threats in real time, keeping e-learning safe and protecting sensitive data (Melo, 2023, para. 3).

### 1.8.2. Pedagogical Barriers

In addition to these technical challenges, Ghounane (2022) highlighted pedagogical barriers in Algeria's sudden transition to online learning (pp. 498- 500):

**a) Declining Student Motivation and Technostress**:

**Findings:**

The quick shift to e-learning left students unprepared, leading to technostress and lower engagement because they weren't digitally prepared.

**AI-based solution:**

AI-powered learning systems can personalize lessons for each student, helping them think critically and work independently. These tools provide instant feedback, set custom challenges, and allow students to track their progress, boosting motivation (Stefanic, 2024).

**b) Limited Interaction and Communication**:

**Findings:**

Relying too much on asynchronous methods (e.g., prerecorded lectures) limited teacher-student interaction, which is key to effective learning.

**AI-based solution:**

AI chatbots can improve real-time communication between students and instructors, offering quick answers and creating a more engaging learning experience. They help bridge the gaps in asynchronous learning by mimicking conversational interactions (Chiu et al., 2023, p.06; Saqr et al., 2024, p. 2).

**c) Teacher "Techno-Resistance"**:

**Findings:**

Many teachers, particularly experienced ones, struggled to use digital tools and resisted adopting platforms like Moodle due to a lack of training and familiarity.

**AI-based solution:**

AI-powered training platforms can offer personalized support to teachers, helping them get comfortable with digital tools like Moodle. These platforms adapt to each teacher's needs, reducing resistance to using new technology (Saqr et al., 2024, p. 4).

**d) Student Platform Aversion**:

**Findings:**

Students often turned to social media (e.g., Facebook, WhatsApp) instead of official platforms to access materials, showing that the official platforms were poorly designed and hard to use.

**AI-based solution:**

AI can improve e-learning platforms like Moodle or Blackboard by analyzing user behavior and preferences. Better interfaces make navigation easier and increase engagement, reducing the need for social media to access resources (Saqr et al., 2024, p. 3).

**e) Policy-Driven Training Gaps**:

**Findings:**

Government mandates for online learning were not supported by enough investment in teacher and student training, which increased skepticism about e-learning.

**AI-based solution:**

AI systems can assess the training needs of teachers and students, recommending personalized programs to improve digital skills. Predictive analytics help allocate resources effectively, making the shift to e-learning smoother (Saqr et al., 2024, p. 5).

## Conclusion

In this chapter, an in-depth exploration of the role of AI in e-learning has been conducted, covering its key concepts and evolving practices. The analysis has showcased important AI-driven strategies, such as tailored and adaptive learning systems, as well as AI-based platforms like Intelligent Tutoring Systems, virtual assistants, and gamified learning environments, stressing their influence on English as a Foreign Language (EFL) teaching. Several obstacles, especially those related to technology and pedagogy, have been examined, with particular attention given to implementation and learner engagement, while highlighting AI's capacity to address these challenges. By evaluating e-learning through both theoretical perspectives (such as behaviorist, constructivist, and collaborative models) and real-world implementations (including MOOCs, flipped classrooms, and blended learning), this chapter positions AI as a pivotal element in contemporary education, especially in improving accessibility, engagement, and effectiveness within EFL scenarios.

# Chapter Two

# Motivation

## Introduction

Motivation is essential for achieving success in e-learning, especially for English as Foreign Language (EFL) students, as it drives engagement, self-discipline, and persistence. In contrast to conventional classrooms, online education—mainly when facilitated by Artificial Intelligence—demands a greater level of learner autonomy, making motivation a critical factor. This chapter delves into the definitions and theories of motivation, emphasizing its significance in AI-enhanced e-learning settings. It also investigates the primary factors that impact motivation, including course design, AI-driven feedback systems, and digital social interactions. Furthermore, it takes into account the cultural and educational background of Algeria and offers practical strategies for boosting learners' motivation through the incorporation of AI.

### 2.1. Motivation Definitions and Perspectives

Motivation plays a key role in learning, affecting students' choices, effort, and persistence. Ryan and Deci (2000, pp. 54–58) explain that motivation comes from both internal and external factors that spark interest, guide actions, and support goal achievement. It includes mental, emotional, and behavioral elements that are vital for active learning.

In AI-supported e-learning, motivation is important for academic success and student satisfaction (Järvelä and Renninger, 2014). EFL learners often face challenges online, like less face-to-face interaction and the need for self-discipline. AI tools can help by providing personalized learning (Chen et al., 2020, para. 4), instant feedback (Kessler, 2018, p. 14), and tailored language practice (Huang, Hew, and Fryer, 2021, p. 242). For instance, adaptive AI systems can support self-regulated learning by helping students set goals, track their progress, and reflect on their learning (Zimmerman, 2002, pp. 64-65). Understanding motivation in this setting helps teachers and developers use AI to keep students engaged and help them reach their learning goals.

## 2.2. Types of Motivation

The dichotomy between intrinsic and extrinsic motivation is central to understanding how e-learning impacts learners:

### 2.2.1. Intrinsic Motivation

Intrinsic motivation is when learners engage in an activity because they enjoy it or find it personally rewarding. EFL learners with this kind of motivation tend to explore language more deeply, practice creatively, and stay persistent through challenges. For instance, a Master 1 English student might use AI language games, digital storytelling, or virtual exchanges simply out of curiosity.

Studies show that e-learning—especially with AI—can boost intrinsic motivation. Sailer et al. (2016, pp. 76–77) found that gamified features like badges, leaderboards, and progress tracking make learning more engaging and fun. Similarly, Plass et al. (2015, pp. 260–265) highlight that colorful, interactive content helps spark curiosity and keeps learners involved. AI tools that adjust lessons based on a student's interests and progress can make learning more personal and enjoyable. (Chen et al., 2020, para. 5).

### 2.2.2. Extrinsic Motivation

Extrinsic motivation involves engaging in learning activities for external rewards or to avoid negative outcomes. This can include earning grades, passing exams, or fulfilling graduation requirements. In the context of EFL learning, Master 1 students of English might participate in AI-supported online courses mainly to complete assignments or meet university requirements.

Although extrinsic motivation can help students get engaged, relying only on it may not keep them motivated over time. Deci et al. (1999) caution that excessive dependence on extrinsic rewards can reduce intrinsic interest (pp. 658–660). However, combining both motivational types can be highly effective. As Alamer (2021) suggests, a balanced approach— where AI tools give rewards and support student independence —can enhance learners' motivation and lead to better learning outcomes (p. 52). For instance, AI features like progress trackers or certificates can provide extrinsic encouragement while supporting personalized and meaningful learning journeys (Hwang et al., 2020, pp. 3-4).

## 2.3. Theories of Motivation in AI-Enhanced E-Learning

Theoretical frameworks are critical for understanding how motivation functions in e-learning environments. These theories guide the design of engaging and effective digital learning experiences. Below are key theories applied to AI-enhanced e-learning contexts:

### 2.3.1. Self-Determination Theory (SDT)

Self-Determination Theory (SDT), developed by Ryan and Deci (2000, pp. 68–72), identifies three psychological needs—**autonomy, competence, and relatedness**—that drive intrinsic motivation. In AI-supported EFL learning, these needs are addressed through adaptive technologies:

**Autonomy**

AI-driven personalization allows learners to control their learning pace and select topics aligned with their interests. For instance, adaptive platforms like Duolingo use algorithms to customize content based on proficiency and preferences, empowering learners to direct their own progress (Hwang et al., 2020, p. 12; Chen et al., 2020, para. 4). This aligns with SDT's emphasis on learner agency (Ryan and Deci, 2000, pp. 68–70).

**Competence**

AI tools such as speech recognition and interactive exercises provide immediate feedback, enabling learners to track progress and improve skills. Real-time assessments help learners identify weaknesses and celebrate achievements, reinforcing confidence (Kessler, 2018, p. 10; VanLehn, 2011, pp. 200–210).

**Relatedness**

AI facilitates collaboration through virtual group projects and peer interactions. Social features in platforms like Discord or AI chatbots create a sense of belonging (Huang et al., 2021, p. 245). Such interactions fulfill the need for connection, which is key to keeping learners engaged (Ryan and Deci, 2000, pp. 70–72).

### 2.3.2. Goal Orientation Theory

Goal Orientation Theory divides learners into those focused on skill development (mastery-oriented) and those focused on outperforming others (performance-oriented) (Dweck, 1986, pp. 1041–1043). AI-based e-learning benefits mastery-oriented learners by offering personalized feedback, as AI systems adjust content to each learner's progress, reducing competition pressure (Chen et al., 2020, para. 7). Self-paced learning is also

supported by AI tutors, allowing learners to revisit difficult material for better understanding (Roll and Winne, 2015, pp. 7–9). Additionally, AI-driven dashboards reduce social comparison by focusing on personal growth instead of rankings, supporting mastery goals (Kizilcec et al., 2016). Research shows that AI's focus on self-improvement boosts intrinsic motivation, leading to more meaningful learning (Ryan and Deci, 2000, pp. 54–58; Patall et al., 2008, pp. 275–280).

### 2.3.3. Expectancy-Value Theory

The Expectancy-Value Theory says that motivation is shaped by learners' beliefs in their ability to succeed (expectancy) and how useful or important they think the task is (value) (Wigfield and Eccles, 2000, pp. 68–81). In AI-enhanced e-learning environments, EFL learners exhibit stronger motivation when tasks feel achievable and match their academic or career goals (Nagengast et al., 2018). AI helps by offering personalized paths, helpful feedback, and support that boost learners' confidence (Hwang et al., 2020, p. 4; Bandura, 2001, p. 10). For instance, AI writing tools that correct grammar and vocabulary in real-time can increase self-belief (Kessler, 2018, pp. 10-14).

When AI tools deliver content tied to real-world applications—such as improving English proficiency for career advancement or communication—learners find greater value from the practical utility of their efforts (Deci and Ryan, 2000, pp. 231–233). This alignment between goals and personal needs keeps them engaged.

AI-enhanced platforms that emphasize language skill development (e.g., speech recognition for pronunciation practice) and highlight real outcomes (e.g., workplace readiness) can significantly enhance motivation. Using AI to support learners within their level of ability (Vygotsky, 1978, pp. 86–88), educators enhance autonomy and competence, key drivers of long-term commitment (Ryan and Deci, 2017, pp. 233–235).

### 2.4. The impact of AI on learners' motivation in education

Artificial Intelligence (AI) technologies—including Intelligent Tutoring Systems (ITS), learning analytics, and AI-driven chatbots—can play a significant role in boosting learners' motivation by adapting educational experiences to suit individual preferences, learning pace, and needs. Such tailored instruction promotes autonomy, a fundamental component of Self-Determination Theory (SDT), by empowering learners to take control of their learning journey (Ryan and Deci, 2000, pp. 68–72; Luckin et al., 2016, pp. 44–52). In the context of language education, tools like virtual tutors and ChatGPT deliver customized feedback and immersive interactions that make learning more engaging and help ease learner anxiety (Kohnke et al., 2023, pp. 170–175; Xu et al., 2021, pp. 5–12).

AI tools that offer immediate responses—such as automatic grading systems—enhance learners' sense of competence by quickly identifying and addressing areas of difficulty, aligning with SDT's focus on developing competence as a key motivator (Holstein et al., 2019, p. 7). Studies have also found that environments powered by AI, particularly those that are interactive and allow for flexible pacing, contribute to greater student motivation and engagement (Zawacki-Richter et al., 2019, p. 15). In addition, AI provides safe spaces for exploration and practice, lowering the pressure of failure and encouraging learners to participate more actively (VanLehn, 2011, pp. 200–210; D'Mello et al., 2014, pp. 155–158).

By supporting SDT's core principles—autonomy through personalized learning, competence through timely and relevant feedback, and relatedness through AI-facilitated collaboration—AI enhances motivational aspects of the educational experience (Elbadiansyah et al., 2024, p. 59). Although concerns such as dependency on AI, discomfort with new technologies, and potential barriers to creativity exist, the benefits remain significant when AI is used thoughtfully (Selwyn, 2019, pp. 118–122; Luckin, 2018, pp. 201–230). With strategic implementation, teacher involvement, and ethical practices, AI can enrich learning environments by making them more inclusive, flexible, and supportive of student motivation (Holstein et al., 2019, p. 15; Zawacki-Richter et al., 2019, p.20).

## 2.5. AI-powered Factors Influencing Motivation in E-Learning

Artificial Intelligence (AI) has emerged as a transformative force in e-learning, significantly influencing student motivation through personalized, interactive, and adaptive learning experiences. Empirical studies highlight several AI-powered factors that enhance motivation while also identifying key challenges that require careful consideration.

### 2.5.1. Personalized Learning and Autonomy

AI tools like Intelligent Tutoring Systems (ITS) and learning analytics platforms tailor educational content to individual learning styles, paces, and preferences. This personalization fosters autonomy, a core component of Self-Determination Theory (SDT) (Ryan and Deci, 2000, pp. 68–72), by allowing students to control their learning paths (Elbadiansyah et al., 2024, pp. 59–60; Sylfauddin and Yuliansyah, 2023, p. 10). For example, AI-driven platforms adjust difficulty levels in real time; ensuring learners remain challenged but not overwhelmed, which sustains engagement and motivation (Koedinger et al., 2020, pp. 5-8).

### 2.5.2. Real-Time Feedback and Competence Development

AI technologies, including automated grading systems and adaptive feedback tools, provide quick and useful insights that enhance students' feelings of competence (a key component of SDT). Research indicates that timely feedback minimizes frustration and assists learners in effectively addressing gaps in their knowledge (Elbadiansyah et al., 2024, p. 65). In the context of language learning, AI applications like ChatGPT and virtual tutors provide opportunities for conversational practice and corrections, making the experience more enjoyable while reducing anxiety levels (Sylfauddin and Yuliansyah, 2023, p. 12).

### 2.5.3. Interactive and Low-Risk Learning Environments

AI creates safe spaces for experimentation, such as virtual language labs (Sylfauddin and Yuliansyah, 2023, p. 11) or STEM (Science, Technology, Engineering, and Mathematics) problem-solving simulations (Koedinger et al., 2020, pp. 5-9), where students can practice without fear of judgment. These environments encourage active participation and risk-taking, which are critical for motivation. For instance, AI chatbots simulate real-world interactions, helping learners build confidence before applying skills in actual scenarios (Goel and Polepeddi, 2016, p. 10).

### 2.5.4. Collaborative AI Tools and Relatedness

AI fosters peer interaction and collaboration through discussion prompts and group project matching (Elbadiansyah et al., 2024, p. 65). These features address SDT's relatedness need by creating a sense of community, even in online settings. AI can also match students into study groups based on how they learn, which improves social learning (Ifenthaler and Yau, 2020, p. 1973).

## 2.6. AI and the ARCS Model: Enhancing Motivation in E-Learning

The ARCS model (Attention, Relevance, Confidence, and Satisfaction) provides a framework for designing motivational learning experiences. Integrating AI into e-learning demonstrates significant potential to enhance each component of ARCS, as evidenced by empirical studies. Below is a synthesis of how AI technologies enhance motivation through this framework:

### 2.6.1. Attention: Sustaining Engagement through Personalization

AI-driven tools dynamically adapt content to maintain learner engagement. For instance:

- **Adaptive Content Delivery:** Systems like intelligent tutoring systems (ITS) adjust pacing, format, and difficulty based on real-time interactions. A meta-analysis by Ma et al. (2014, pp. 907–909) confirms that ITS significantly improve learning outcomes by tailoring content to individual needs. Additionally, a study by Kulik and Fletcher (2016, pp. 55–60) indicates that ITS has a moderate positive effect on academic achievement, outperforming traditional instruction methods.
- **Gamification:** AI algorithms personalize challenges and rewards Manoharan and Nagulapally (2024, pp. 219–229) demonstrated that integration of adaptive gamification tactics into educational platforms, adjusting learning experiences according to individual preferences and skills.

### 2.6.2. Relevance: Tailoring Content to Learner Needs

AI enhances relevance by aligning materials with individual goals and contexts:

- **Personalized Recommendations:** Modern LMS platforms employ AI-based recommendation engines to match courses with learners' goals and interaction history. A recent comprehensive review by Abdul Wahid and Khan (2024, pp. 1325–1327)

illustrates how AI-driven student modeling and recommendation algorithms map individual objectives and past behavior to tailored course suggestions—significantly enhancing learners' perceived relevance and engagement

- **Contextual Learning:** NLP-driven chatbots simulate real-world language scenarios—such as ordering at a restaurant or navigating an airport—to provide learners with immersive, task-based practice. Xu et al. (2024) demonstrated that large language model–based situational dialogue systems generalize well across varied contexts, enhancing the authenticity of language learning. Additionally, Huang et al. (2021) found that chatbot-assisted learning significantly improves retention, particularly when the feedback is tailored to learners' communicative goals (p. 18).

### 2.6.3. Confidence: Building Self-Efficacy with Feedback

AI fosters confidence through immediate, actionable feedback:

- **Real-Time Assessment:** Tools like ITS provide adaptive hints and corrections. Koedinger et al, (2012) demonstrated that AI-based feedback in STEM courses supports learning by guiding students through step-by-step problem-solving, which can foster greater learner confidence and autonomy (pp. 5-8).
- **Progress Tracking:** AI dashboards visualize milestones, helping learners track growth. Research in learning analytics indicates that data-driven feedback and visual progress tracking can enhance learner engagement and support persistence (Matus, Ružić, and Balaban, 2024, pp. 18–27).

### 2.6.4. Satisfaction: Reinforcing Achievement

AI enhances satisfaction by creating rewarding learning experiences:

- **Automated Recognition:** AI awards certificates or badges when learners complete key goals. Hamari et al., (2014, p. 3027) demonstrated that gamified elements such as badges and rewards can increase intrinsic motivation and user engagement, which has been applied in both educational and corporate training contexts.
- **Predictive Analytics:** AI reduces frustration by identifying knowledge gaps early. A study demonstrated that analyzing students' behavioral data using sequence classification models can accurately predict underperformance early in a course, enabling timely interventions and enhancing overall learning experiences (Nuankaew and Nuankaew, 2022, pp. 956–959).

## 2.7. Motivational Challenges in AI-Enhanced E-Learning

While AI-enhanced e-learning holds great potential for improving learner engagement, it also presents distinct challenges that may hinder motivation. The following synthesis outlines key motivational obstacles identified in recent empirical studies, contextualized within the e-learning environment.

### 2.7.1. Metacognitive Laziness and Reduced Self-Regulation

Generative AI tools have the potential to undermine learners' self-regulated learning by unintentionally encouraging them to transfer critical thinking to the system. Fan et al. (2024) found that while AI supports increased short-term performance, it did not increase intrinsic motivation. Instead, it encouraged what they refer to "metacognitive laziness," in which students became overly reliant on AI for monitoring and strategy, which undermined their ability to engage independently (pp. 4-20).

### 2.7.2. Lowered Collaborative Motivation from Reduced Social Presence

The social cues that human partners provide are frequently absent from AI-driven collaboration (such as AI-assisted pair programming), which reduces motivation to engage and persevere. University students in a study comparing human-human pairs with AI-assisted pairs (using GPT-3.5 Turbo and Claude 3) reported much lower levels of social connectedness and collaboration quality in the AI condition. This decline was linked to lower levels of intrinsic motivation for the programming tasks (Fan, Liu, Zhang, and Pan, 2025, p. 4-5).

### 2.7.3. Algorithmic Bias, Transparency Gaps, and Trust Deficits

Learners lose trust and are less inclined to participate when they believe AI recommendations are biased or unclear. Holstein et al. (2019, p. 1-14) highlighted that algorithmic bias and lack of transparency in AI-powered educational tools can lead to distrust, especially among underrepresented groups who may feel the system fails to reflect their needs or context—ultimately demotivating them from full engagement.

### 2.7.4. AI Anxiety and Eroded Confidence

Beyond technical difficulties, a unique kind of "AI anxiety" may manifest: the fear of abusing the tool or of being evaluated by it, which damages learners' self-esteem and

perseverance. The significance of supporting and building confidence around AI tools was highlighted by Wang et al. (2022, pp. 10–15), who demonstrated that higher levels of AI anxiety predict lower engagement and reduced motivation to explore AI-enhanced learning activities.

## 2.8. Strategies for Enhancing Motivation

As AI technologies continue to shape digital education, their integration must be intentional to foster—not hinder—learner motivation. Chen, Hu, and Wei (2024) demonstrated that leveraging AI's strengths can address common motivational challenges in e-learning environments (pp. 15–16).

### 2.8.1. Promoting Self-Regulated Learning through AI Scaffolding

AI tools can encourage learners to take charge of their learning process rather than passively relying on automated responses. Mazari (2025, pp. e4/14–e4/16) emphasizes that integrating metacognitive supports—like reflective prompts, strategy suggestions, and interactive feedback—within AI platforms can foster deeper engagement. These elements help learners plan, monitor, and evaluate their own learning, which strengthens intrinsic motivation and builds independence in online environments.

### 2.8.2. Enhancing Social and Emotional Engagement with Human-AI Interaction

AI systems can be designed to support—not replace—social learning. Fan, Liu, Zhang, and Pan (2025) found that learners benefit when AI supports collaboration rather than replacing peer interaction. Strategies such as integrating emotionally aware AI chatbots, using AI to facilitate group discussions, or providing conversational feedback can increase emotional engagement and motivation. Human-AI interaction that feels responsive and socially aware can enhance the learner's sense of belonging in virtual classrooms (pp. 13-14).

### 2.8.3. Increasing Trust and Motivation through Transparent AI Feedback

One of the most critical strategies for motivation is ensuring that AI feedback is transparent and explainable. Halkiopoulos and Gkintoni (2024) highlight that students are more motivated when they understand how AI-generated feedback or assessments are produced. Implementing explainable AI (XAI) tools—where learners can see how and why

the system made a suggestion—builds trust and a sense of fairness and keeps students engaged over time (p. 12).

### 2.8.4. Reducing AI Anxiety to Support Learner Confidence

AI anxiety—fear or discomfort in interacting with AI—can hinder learners' willingness to engage. Wang et al. (2022, pp. 5–15) found that students with high levels of AI anxiety showed lower motivation to participate in AI-enhanced learning activities. To address this, AI systems should be introduced step-by-step, with training and supportive environments that reduce stress. Tutorials, practice activities, and clear explanations about the AI's purpose help learners feel more confident, in control, and motivated.

## Conclusion

Motivation is crucial in shaping student engagement and success within AI-enhanced e-learning environments. This chapter has examined key motivational theories, including Self-Determination Theory and Goal Orientation Theory while addressing the distinction between intrinsic and extrinsic motivation. It explored how AI-driven features—such as personalized feedback, adaptive content, and learner autonomy—can influence motivation, as well as the challenges that may arise, including AI anxiety, algorithmic bias, and diminished human interaction. Particular emphasis was placed on the Algerian context, considering cultural attitudes, technological infrastructure, and accessibility issues that affect learner motivation. Strategies to foster engagement through interactive AI tools, tailored learning paths, and the ARCS model were also discussed. Understanding these factors is essential for enhancing learner motivation and achieving better educational outcomes in digital settings. This foundational insight sets the stage for the following chapter, which presents the research methodology and practical investigation into how AI-enhanced e-learning influences the motivation of Master 1 students of English at Mohamed Kheider Biskra University.

# Chapter Three

# Field Work

## Introduction

This chapter presents the practical part of the study, focusing on the methodology used to investigate how artificial intelligence enhances EFL learners' motivation in e-learning environments. A qualitative approach was adopted to gain deeper insights into students' and teachers' experiences. The chapter outlines the target population, sampling methods, data collection tools and the procedures followed. It also explains the data analysis methods used to ensure valid and reliable results. The aim is to explore the impact of AI on learner motivation, engagement, and the challenges faced in online education.

### 3.1. Research Methodology

In order to accomplish the goals of the study, a qualitative method was used to investigate how artificial intelligence might improve students' motivation in online learning settings. This method was chosen because it can offer deep insights into the varying subjective experiences and viewpoints of teachers and students.

### 3.2. Population and Sampling

The target population for this study consists of Master 1 students of English and their teachers at Mohamed Kheider University of Biskra. Students involved are enrolled in e-learning courses, while teachers selected for the study have experience in implementing online instruction platforms. This population was chosen due to their direct interaction with e-learning environments, which makes them ideal participants for assessing the impact of artificial intelligence on learner motivation.

#### 3.2.1. Students' Sample

A randomly chosen group of thirty (N° 30) students from the overall population of 172 participated in a semi-structured questionnaire to explore their experiences with e-learning and how it influences their motivation. The selected students represent various backgrounds, academic performances, and technological competencies to ensure a comprehensive analysis of e-learning's impact. Their feedback offered important perspectives on their engagement, difficulties encountered, and general satisfaction with online learning platforms.

#### 3.2.2. Teachers' Sample

Five (N° 5) teachers were randomly selected to participate in semi-structured interviews. These instructors have varying levels of experience with e-learning platforms, which allows for a broad perspective on pedagogical strategies, student engagement, and the effectiveness of AI tools in fostering motivation. Their contributions help highlight both the opportunities and limitations presented by the integration of AI in online education.

### 3.3. Data Collection Tools

To gather relevant data, the study employed two main instruments:

#### 3.3.1. Students' questionnaire

A semi-structured questionnaire was designed using Google Forms and distributed to thirty (N° 30) students through digital communication platforms, including Facebook groups and Messenger. It consisted of 15 questions, four of which were open-ended to allow respondents to express their opinions freely The questionnaire explored learners' engagement, motivation, and the challenges encountered in e-learning. Specific sections addressed aspects such as the usability of e-learning platforms, students' preferences for online learning compared to traditional classrooms, and their perceptions of teacher feedback and peer interaction in digital environments.

#### 3.3.2. Teachers' Interview

Semi-structured interviews were conducted with five (N° 5) selected teachers using a set of guiding questions that allowed for open-ended responses. The interview questions were sent and received via email, providing participants with the flexibility to respond in detail at their convenience. These interviews provided deeper insights into teachers' views on the effectiveness of AI in enhancing students' motivation, the instructional strategies used with AI tools, and the pedagogical challenges faced. The format allowed for in-depth discussion, enabling participants to share thoughtful insights based on their practical experiences with AI-enhanced digital instruction.

## 3.4. Data Analysis

### 3.4.1. Analysis of Students' Questionnaire

**Section One: General information**

| Options | Respondents | Percentages |
|---|---|---|
| 20-22 | 7 | 23.3% |
| 23-25 | 16 | 53.3% |
| 26 and above | 7 | 23.3% |
| **Total** | **30** | **100%** |

**Table 3.4.1.1 Age**

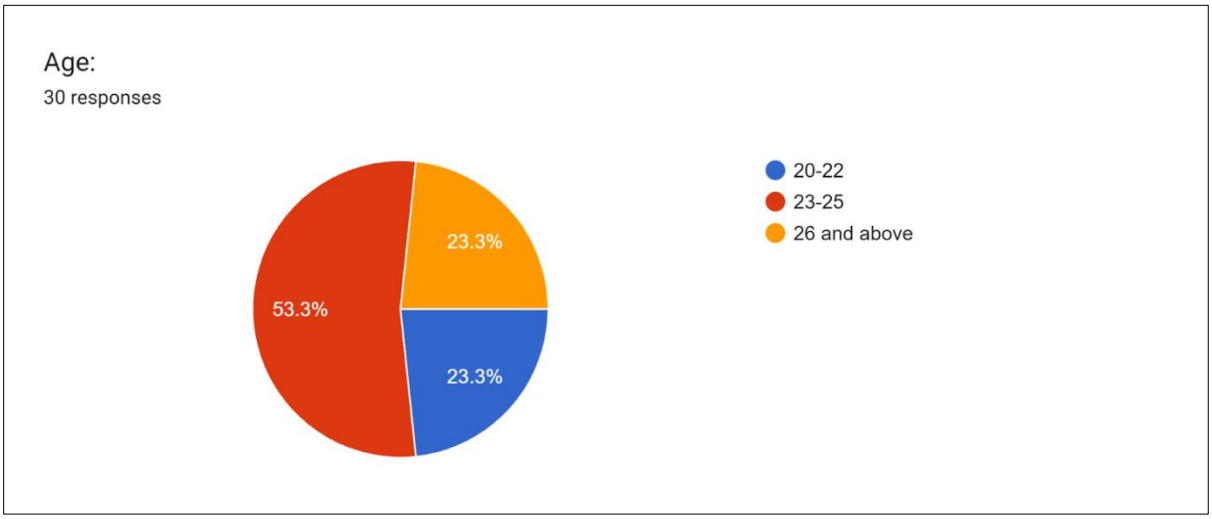


**Figure 3.4.1.1 Age**

The survey collected responses from 30 students, providing insights into the age distribution of the participants. The data reveals that the largest group of respondents, comprising 53.3% (16 students), falls within the 23-25 age range. This suggests that the majority of the surveyed students are in their early to mid-twenties, which may align with the typical age of upper-level undergraduate or graduate students. The remaining participants are evenly split between the younger (20-22) and older (26 and above) age groups, each representing 23.3% (7 students). This balanced distribution highlights the presence of both younger students and those who might be pursuing further education later in life or balancing studies with other commitments.

| Options | Respondents | Percentages |
|---|---|---|
| Male | 8 | 26.7% |
| Female | 22 | 73.3% |
| **Total** | **30** | **100%** |

**Table 3.4.1.2 Gender**

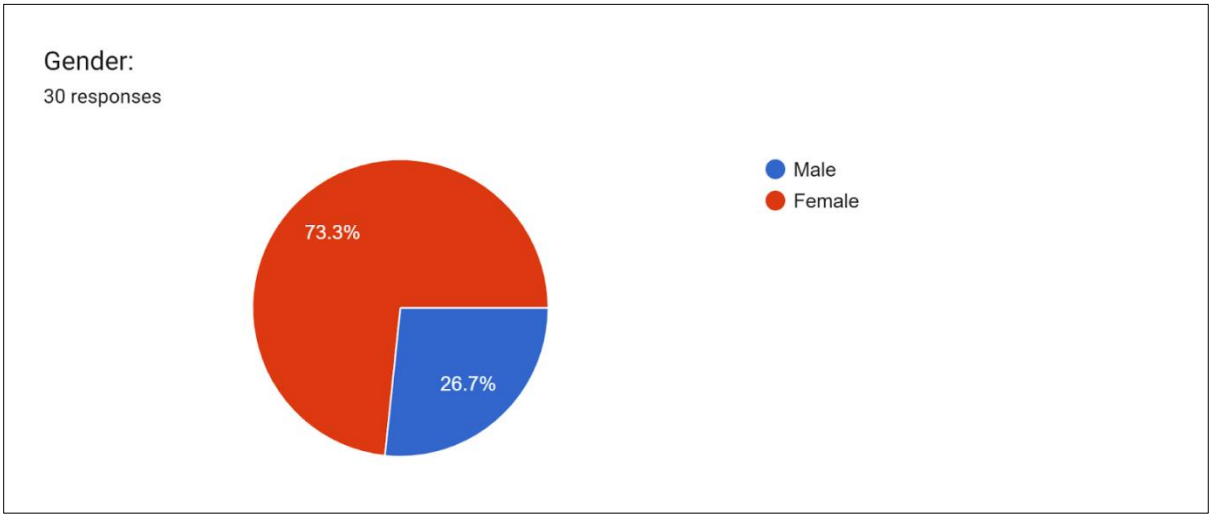


**Figure 3.4.1.2 Gender**

The survey population consists of 30 Master's Year 1 English as Foreign Language (EFL) students, with a female majority (73.3%) and a male minority (26.7%). A total of 30 questionnaires were collected. This female majority aligns with the broader phenomenon of the "feminization" of student populations, particularly observed in humanities and language programs. The data highlights a significant majority of female respondents (73.3%) compared to male respondents (26.7%), reflecting higher participation rates among female students in this academic sample.

**Q1- Have you previously engaged in e-learning as part of your academic studies?**

| Options | Respondents | Percentages |
|---|---|---|
| Yes | 28 | 93.3% |
| No | 2 | 6.7% |
| **Total** | **30** | **100%** |

**Table 3.4.1.3 Prior E-Learning Engagement in Academic Studies**

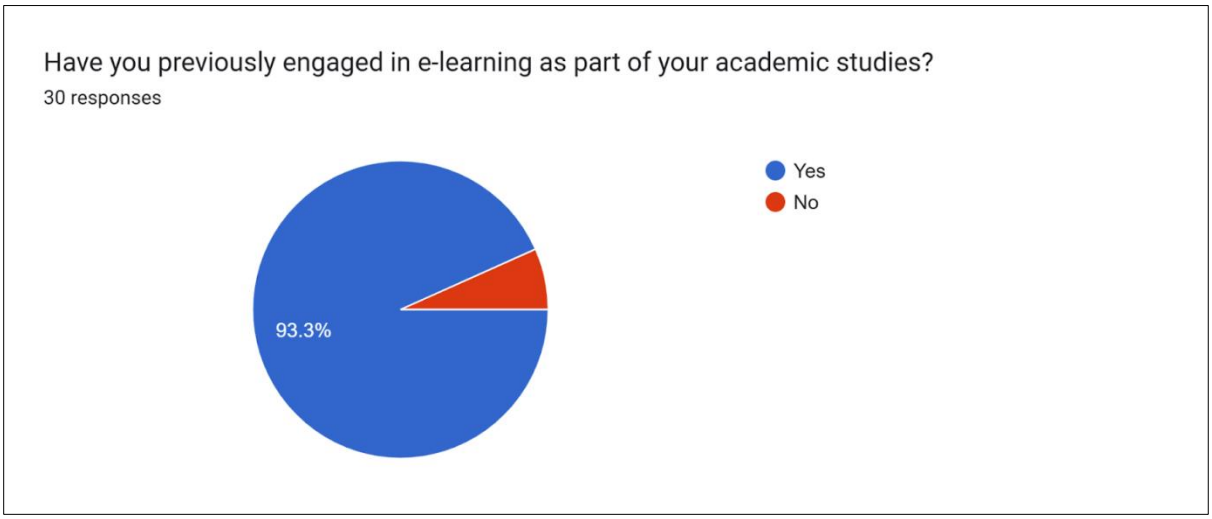


**Figure 3.4.1.3 Prior E-Learning Engagement in Academic Studies**

A survey of 30 students shows 93.3% (28 participants) have prior e-learning experience, reflecting its widespread academic integration, while 6.7% (2 students) lack exposure, potentially due to access barriers or resistance. The majority's familiarity positions them to critically evaluate AI-enhanced tools, offering insights into motivational impacts, whereas the minority's perspectives highlight adoption challenges, guiding AI-driven solutions to bridge gaps and foster inclusivity.

**Section Two: E-Learning Experience**

**Q1: Which e-learning platforms have you used during your academic studies?**

| Options | Number of selections | Percentages |
|---|---|---|
| Moodle | 23 | 76.7% |
| Google Classroom | 16 | 53.3% |
| YouTube | 15 | 50% |
| Coursera / MOOCs ( Massive Open Online Courses) | 4 | 13.3% |

**Table 3.4.1.4 E-learning platforms used during the academic studies**

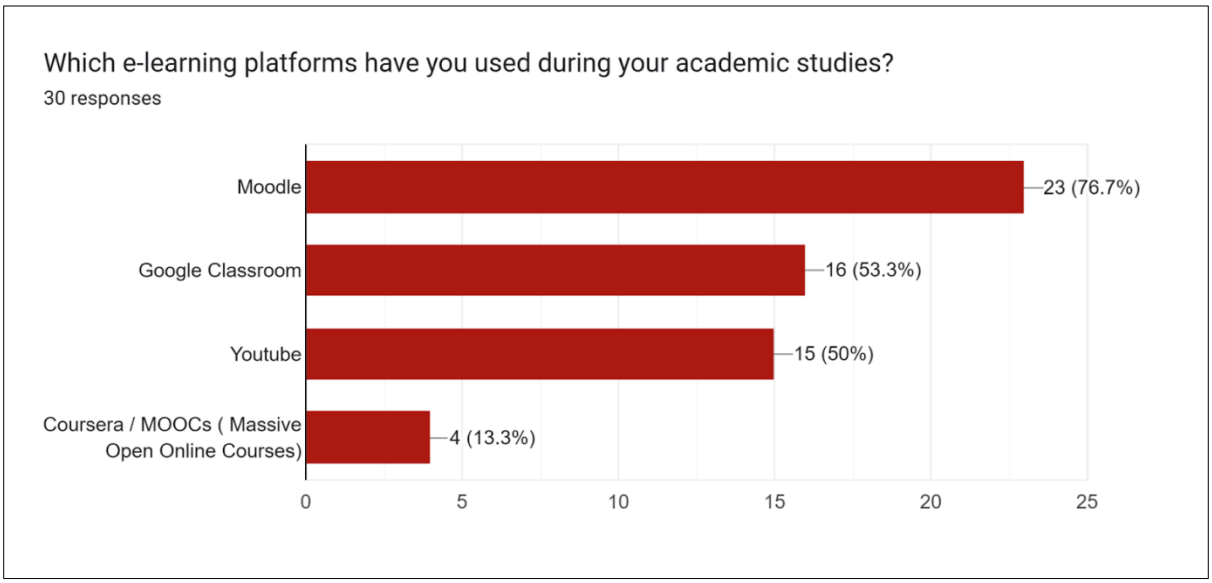


**Figure 3.4.1.4 E-learning platforms used during the academic studies**

A survey on e-learning platform usage among EFL learners at Mohamed Khider Biskra University reveals that Moodle is the most widely used platform (76.7%), followed by Google Classroom (53.3%) and YouTube (50%). In comparison, Coursera/MOOCs see minimal use (13.3%). Participants were allowed to select multiple platforms; thus, the total percentage exceeds 100%, with resulting in 58 selections from 30 respondents. This indicates that learners frequently utilize a combination of platforms to support their learning. The findings reflect a fragmented yet adaptable digital learning environment, where students leverage various tools to meet their academic needs.

**Q2: How frequently do you use e-learning platforms for academic purposes?**

| Options | Respondents | Percentages |
|---|---|---|
| Daily | 2 | 6.7% |
| A few times per week | 10 | 33.3% |
| Once per week | 9 | 30% |
| Rarely | 9 | 30% |
| Never | 0 | 0% |
| **Total** | **30** | **100%** |

**Table 3.4.1.5 E-learning platforms usage frequency**

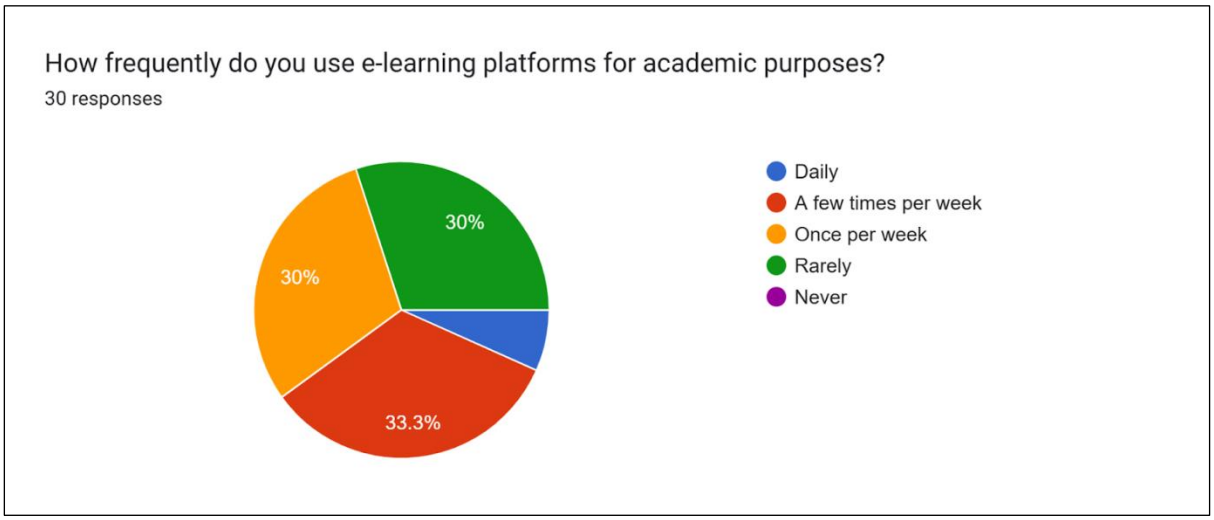


**Figure 3.4.1.5 E-learning platforms usage frequency**

The analysis of e-learning platform usage frequency among EFL learners reveals distinct patterns in engagement. Only 6.7% (2 students) use these platforms daily, indicating limited reliance on e-learning for routine academic activities. However, a combined 63.3% engage weekly, with 33.3% (10 students) accessing platforms "a few times per week" and 30% (9 students) using them "once per week." This suggests that e-learning tools are primarily employed for structured tasks like assignments or course material access, likely tied to institutional platforms such as Moodle (76.7%) and Google Classroom (53.3%). Meanwhile, 30% (9 students) use platforms "rarely," reflecting a reliance on these tools only for mandatory or situational purposes. The absence of "Never" responses (0%) aligns with previous data showing universal e-learning exposure.

**Q3: In comparison to traditional classroom learning, do you perceive e-learning as more flexible?**

| Options | Respondents | Percentages |
|---|---|---|
| Yes | 17 | 56.7% |
| No | 6 | 20% |
| Maybe | 7 | 23.3% |
| **Total** | **30** | **100%** |

**Table 3.4.1.6 E-learning flexibility in comparison to traditional classroom learning**

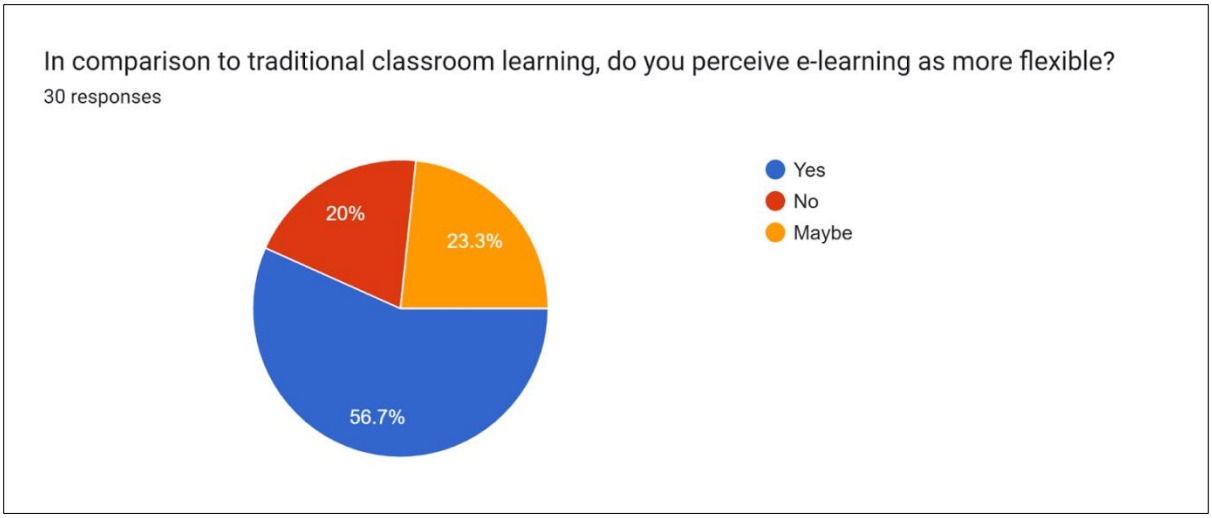


**Figure 3.4.1.6 E-learning flexibility in comparison to traditional classroom learning**

A majority of respondents (56.7%) precieve e-learning as more flexible than traditional classrooms, indicating a strong preference for the adaptability of digital education. However, a notable portion of participants (23.3%) expressed uncertainty ("Maybe"), suggesting that flexibility may depend on specific circumstances or individual preferences. Additionally, 20% of respondents favored traditional learning, possibly due to factors such as face-to-face interaction, structured environments, or technological challenges.

This aligns with prior data showing that 93.3% had e-learning experience, suggesting familiarity reinforces flexibility recognition. Doubts among opponents may arise from platform usability issues (e.g., Moodle/Google Classroom limitations) or insufficient support for self-directed learning. The findings underscore e-learning's strengths while highlighting the need to improve platform usability and institutional support to maximize flexibility for all learners.

**Q4: In your opinion, what are the primary advantages of e-learning for academic success?**

An analysis of the feedback reveals three prominent advantages of e-learning. The most frequently noted benefit is flexibility, as learners value the freedom to study at their own pace, set their schedules, and access course content from various locations. This adaptability helps them manage academic duties alongside personal and professional obligations. Another key advantage is that e-learning is often described as convenient and time-efficient. It minimizes the need for travel, conserves energy, and promotes effective time management, resulting in a more streamlined learning experience.

Additionally, easy access to resources and opportunities for personalized learning are highly appreciated. Participants pointed out that the ability to revisit materials and explore diverse educational content enhances understanding and meets individual learning needs. Altogether, these aspects are crucial in improving students' academic performance and motivation in a digital learning setting.

**Section Three: Motivation and Engagement in E-Learning**

**Q1: On a scale of 1 to 5, how motivated do you feel when engaging in e-learning activities?**

| Options | Respondents | Percentages |
|---|---|---|
| 1 | 2 | 6.7% |
| 2 | 8 | 26.7% |
| 3 | 9 | 30% |
| 4 | 7 | 23.3% |
| 5 | 4 | 13.3% |
| **Total** | **30** | **100%** |

**Table 3.4.1.7 Motivation scale during the engagement in E-learning activities**

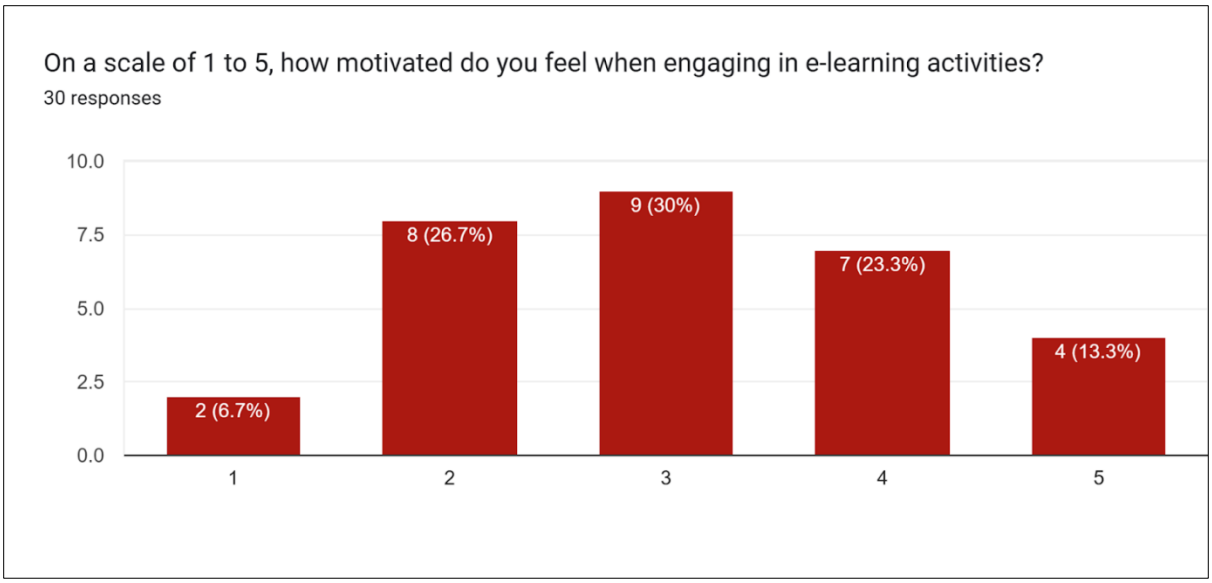


**Figure 3.4.1.7 Motivation scale during the engagement in E-learning activities**

The survey data from 30 respondents provides a detailed understanding of EFL learners' motivation levels during e-learning activities. A notable pattern emerges in the distribution of responses: 6.7% of participants (2 respondents) reported the lowest motivation level (score 1), and 26.7% (8 respondents) selected score 2, representing low motivation overall. 30% (9 respondents) expressed neutral feelings (score 3). Meanwhile, 23.3% (7 respondents) indicated moderately high motivation (score 4), and 13.3% (4 respondents) reported the highest motivation level (score 5), together forming 36.6% (11 respondents) with high motivation (scores 4–5). This near-balance between low, neutral, and higher motivation suggests a lack of consensus among learners, with a slight leaning toward neutral or moderate motivation. The largest single group of respondents fell into the neutral category, which may reflect challenges in sustaining engagement or a need for more compelling and interactive e-learning experiences.

**Q2: Which of the following factors contribute to your motivation in an e-learning environment?**

| Options | Number of selections | Percentages |
|---|---|---|
| Interactive content (videos, quizzes, discussions) | 21 | 70% |
| Timely feedback from instructors | 15 | 50% |
| Self-paced learning opportunities | 12 | 40% |
| Gamification elements (badges, leaderboards, rewards) | 13 | 43.3% |
| Collaborative learning with peers | 9 | 30% |

**Table 3.4.1.8 Factors contributing to motivation in e-learning**

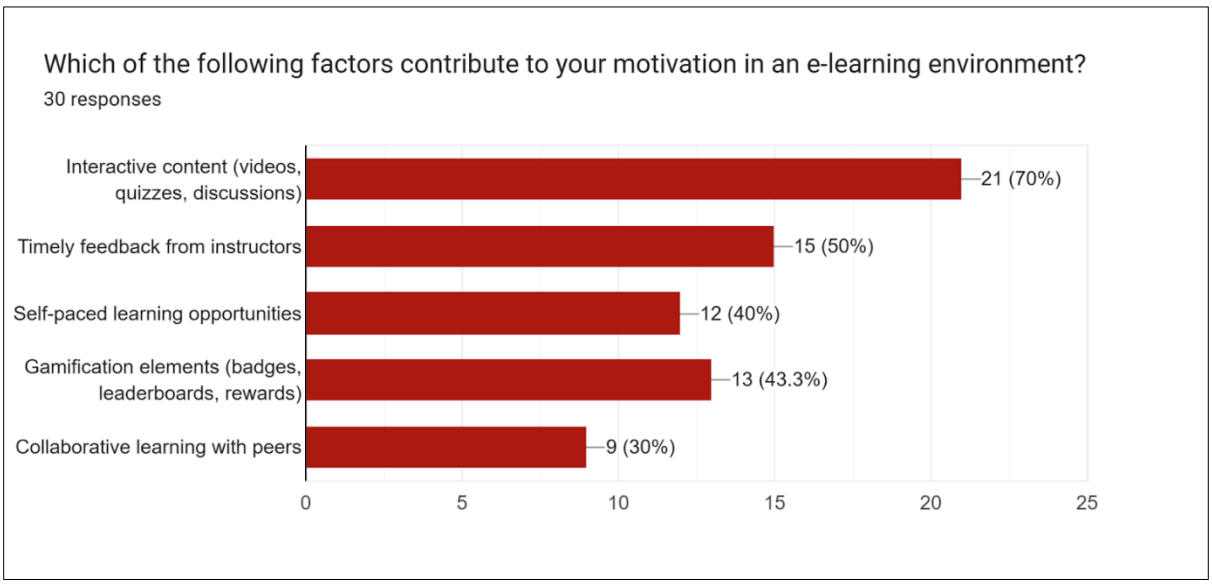


**Figure 3.4.1.8 Factors contributing to motivation in e-learning**

The analysis of motivational factors in e-learning, based on responses from 30 participants (with the option to select multiple factors; thus, the total percentage exceeds 100%), reveals key learner preferences. The most significant motivator is interactive content—such as videos, quizzes, and discussions—selected by 70% of respondents, highlighting the value of multimedia engagement and active participation. Timely instructor feedback follows, chosen by 50%, emphasizing its role in maintaining motivation and supporting learning progress. Gamification elements (43.3%) and self-paced learning (40%) also contribute to motivation, though to a lesser extent. Notably, collaborative learning with peers ranked lowest at (30%), suggesting a learner preference for individualized or instructor-led engagement over peer interaction in e-learning environments.

**Q3: Do you find e-learning more engaging compared to face-to-face learning? Please explain your response?**

The feedback highlights three key patterns regarding student engagement in e-learning compared to traditional classroom settings. Firstly, many learners consider e-learning to be engaging primarily because of its flexibility and the availability of interactive elements like videos, quizzes, and multimedia resources. These features enable learners to progress at their own pace and revisit content as needed, which enhances comprehension and keeps them involved. Secondly, face-to-face instruction is often favored for its immediate feedback and direct communication, which are seen as effective in encouraging participation and maintaining motivation. The presence of instructors and peers in real-time fosters a more interactive and organized learning atmosphere. Lastly, many responses suggest that engagement levels vary depending on individual preferences, how the course is structured, and the teaching methods employed. Some students are more motivated by digital and flexible learning, while others respond better to the hands-on and interactive nature of in-person education.

**Section Four: Challenges and Limitations of E-Learning**

**Q1: What challenges have you encountered while using e-learning platforms?**

| Options | Number of selections | Percentages |
|---|---|---|
| Limited interaction with instructors | 15 | 50% |
| Internet connectivity issues | 18 | 60% |
| Technical difficulties with platforms | 20 | 66.7% |
| Lack of motivation or self-discipline | 17 | 56.7% |
| Difficulty comprehending online content | 10 | 33.3% |

**Table 3.4.1.9 Challenges encountered while using e-learning platforms**

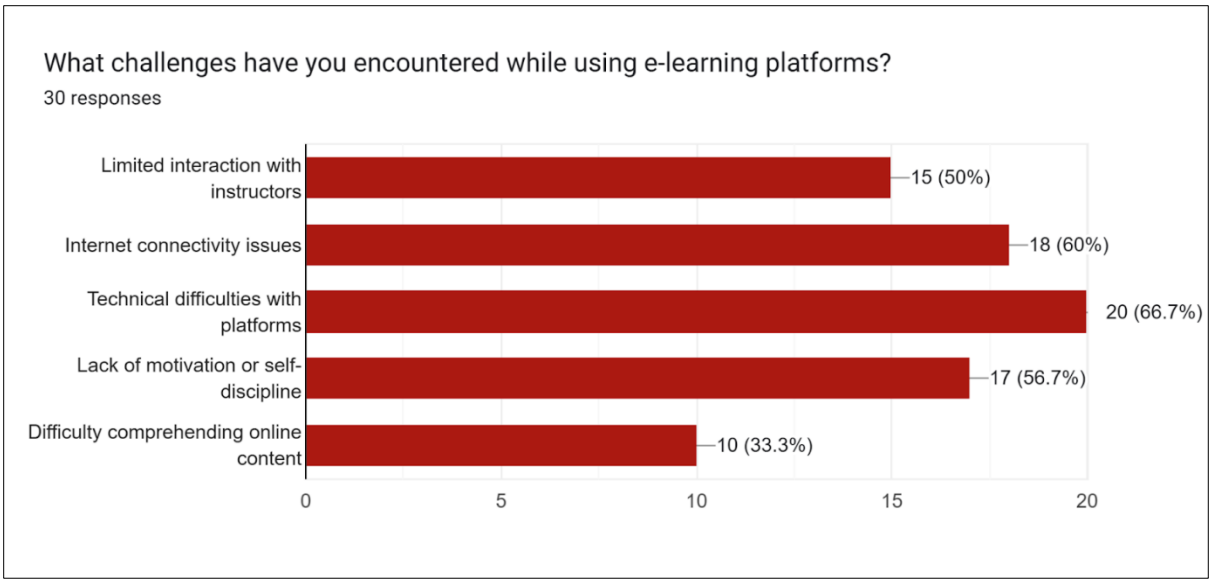


**Figure 3.4.1.9 Challenges encountered while using e-learning platforms**

The analysis of challenges faced by 30 e-learning participants (with the option to select multiple challenges) shows that the most common issues were technical platform problems (66.7%) and internet connectivity issues (60%), pointing to major infrastructure shortcomings. Other significant challenges included lack of motivation or self-discipline (56.7%) and limited interaction with instructors (50%), indicating a need for better engagement and support. Although fewer participants (33.3%) reported difficulties understanding content, it still highlights issues in content delivery. On average, each participant faced nearly three overlapping challenges, showing that these issues are often interconnected. To improve e-learning, institutions should focus on enhancing technical infrastructure, boosting engagement through interactive tools and instructor involvement, and ensuring accurate data reporting in evaluations.

**Q2: In your opinion, what measures can be taken to address these challenges and improve the e-learning experience?**

The feedback reveals three major trends for enhancing e-learning effectiveness. First, there is a strong emphasis on improving technical support and infrastructure. Participants frequently mentioned the need for reliable internet access, user-friendly platforms, and responsive technical assistance to address system glitches and usability issues. Ensuring that platforms are intuitive and regularly maintained is seen as essential for reducing technological barriers. Second, many respondents highlighted the importance of making e-learning more interactive and engaging. Suggestions included incorporating multimedia elements such as videos, quizzes, gamification, and virtual simulations to foster active

learning. Enhancing communication features and designing platforms that promote genuine interaction between students and instructors were also seen as vital for sustaining engagement. Third, training emerged as a key priority—both for educators and students. Participants stressed the need to train teachers in using e-learning tools effectively and to provide students with guidance on navigating platforms. This kind of support helps boost user confidence, motivation, and the overall learning experience. Together, these three trends point to the need for a balanced approach that addresses the technical, pedagogical, and human aspects of e-learning.

**Section Five: Feedback and Recommendations**

**Q1: Do you believe that you receive sufficient feedback from instructors in e-learning courses?**

| Options | Respondents | Percentages |
|---|---|---|
| Yes | 9 | 30% |
| No | 5 | 16.7% |
| Sometimes | 16 | 53.3% |
| **Total** | **30** | **100%** |

**Table 3.4.1.10 Sufficiency of instructor feedback in e-learning courses**

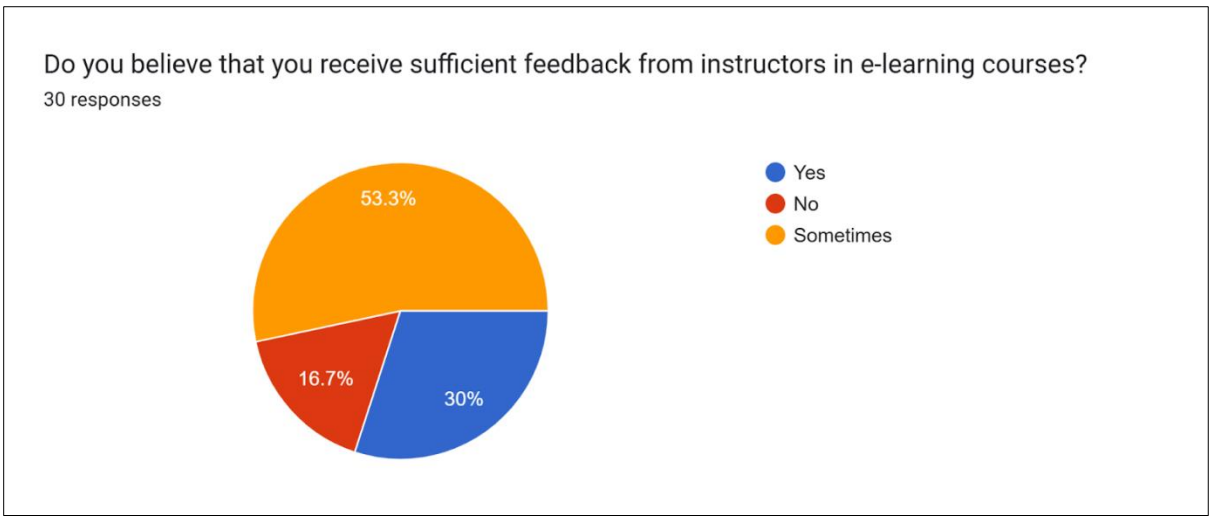


**Figure 3.4.1.10 Sufficiency of instructor feedback in e-learning courses**

The survey data highlights students' mixed perceptions of instructor feedback in e-learning. While 30% felt they received enough feedback, over half (53.3%) said they only received it occasionally, and 16.7% felt the feedback was lacking. These results point to inconsistency in feedback delivery. To improve the e-learning experience, institutions should

aim to standardize and strengthen feedback practices to support student engagement and learning outcomes.

**Q2: Which method of feedback do you find most effective for maintaining motivation in e-learning?**

| Options | Number of selections | Percentages |
|---|---|---|
| Written comments on assignments | 19 | 63.3% |
| Video explanations from instructors | 16 | 53.3% |
| Live discussions and Q&A sessions | 16 | 53.3% |
| Automated feedback from quizzes and assessments | 14 | 46.7% |

**Table 3.4.1.11 The Effectiveness of Feedback Methods in Maintaining Motivation in E-Learning**

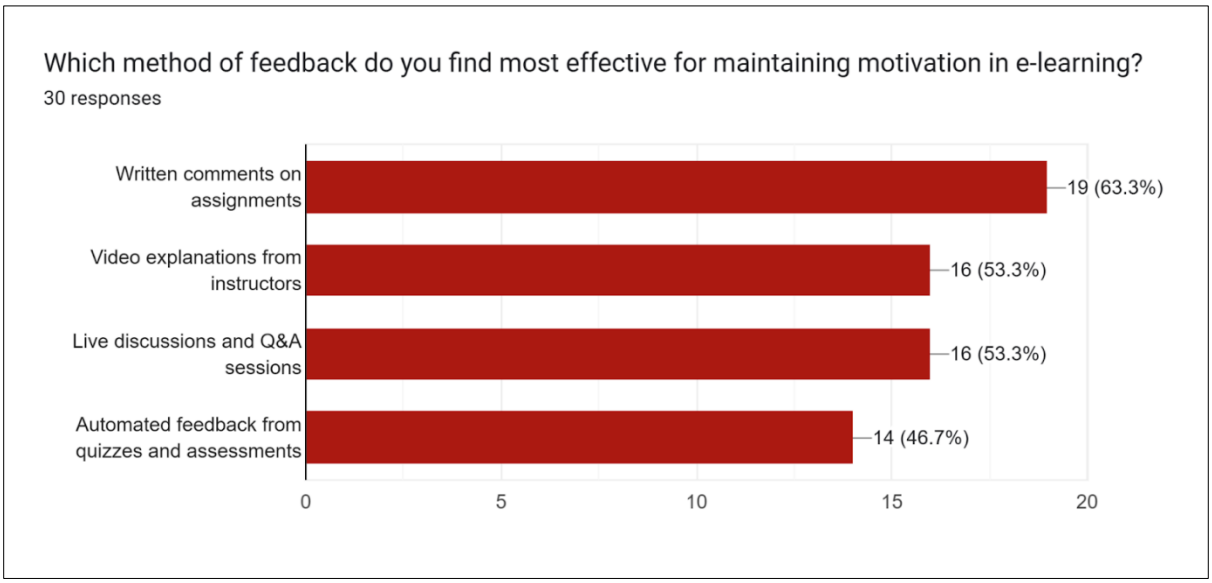


**Figure 3.4.1.11 The Effectiveness of Feedback Methods in Maintaining Motivation in E-Learning**

The survey of 30 e-learners revealed that written comments on assignments (63.3%) are the most effective feedback method for maintaining motivation, followed closely by video explanations and live Q&A sessions (both 53.3%), indicating a preference for personalized and interactive feedback. Automated quiz feedback was less favored (46.7%),

likely due to its impersonal nature. Since respondents could select multiple options—averaging 2.16 choices per person—the total percentage exceeds 100%. These results suggest that learners benefit most from a combination of detailed, instructor-led, and real-time feedback rather than relying on a single method. While the small sample size limits broader conclusions, the data underscores the importance of human-centered feedback in e-learning motivation.

**Q3: What suggestions do you have for improving e-learning to enhance student motivation?**

Across the feedback, three closely connected trends emerge for boosting motivation in e-learning: first, leveraging interactive, multimedia-rich content—such as videos, animations, simulations, quizzes, and gamified elements like points and badges—to transform passive lectures into engaging, active experiences; second, delivering regular, personalized feedback through clear goals, tailored learning paths, and timely teacher (or AI-driven) responses that help learners chart their progress and stay on track; and third, fostering social interaction and collaboration by integrating synchronous and asynchronous peer activities, discussion forums, group projects, and visible instructor presence to build community, accountability, and a supportive learning environment.

### 3.4.2. Analysis of Teachers' Interview

**Q1: How does e-learning, particularly with AI tools, affect students' motivation compared to traditional classroom learning in EFL contexts?**

The interview data reveals several key trends regarding the impact of AI in e-learning for EFL (English as a Foreign Language) learners. One of the most prominent themes is the enhanced motivation and engagement AI tools bring to the learning process. Participants consistently note that AI makes learning easier, faster, and more accessible, particularly for tasks and assignments. Another central trend is the role of AI in enabling personalized learning experiences. Through adaptive technologies and tailored content, students can learn at their own pace, receive immediate feedback, and benefit from support that aligns with their individual needs and skill levels. The interactivity and autonomy offered by AI-driven platforms are also significant advantages over traditional methods. Additionally, the perception of AI as a modern and trending tool contributes to its appeal among learners, and further boosts motivation. Overall, the responses highlight a clear belief that AI-integrated e-

learning environments provide more effective, student-centered learning experiences for EFL learners.

**Q2: What are the biggest challenges you face when teaching English through e-learning, and how might AI tools help address these challenges?**

A dominant theme is the misuse or overdependence on AI by students, with concerns that learners rely on AI even for simple tasks, potentially hindering their critical thinking and autonomy. Several participants view AI as a double-edged sword—while it can enhance learning and efficiency, improper use can negatively affect learning outcomes. Another key challenge noted is the need for digital literacy and technical skills among students and educators. Effective use of AI tools requires a certain level of competence, which not all users possess. Maintaining student engagement is also a recurring concern in e-learning environments. Participants suggest that AI tools, when used correctly, can help address this by offering personalized feedback, using data analytics to identify struggling students, and incorporating gamification to make learning more appealing. Additionally, a lack of infrastructure and institutional support, such as inadequate equipment, is identified as a barrier to successful AI and e-learning integration. Overall, the responses reflect a nuanced view: while AI offers valuable support and potential for enhanced learning, its effectiveness depends on balanced use, digital readiness, and proper institutional support.

**Q3: How do you provide feedback to students in e-learning (e.g., via AI-driven platforms like automated essay graders or chatbots)? Do you think AI-enhanced feedback is as effective as face-to-face feedback for EFL learners?**

The interview data reveals a clear trend toward a blended approach to providing feedback in e-learning environments. Most respondents use a combination of AI-driven tools, such as chatbots and automated essay graders, alongside traditional face-to-face feedback. While AI is appreciated for its immediacy, structure, and ability to deliver expanded feedback quickly, face-to-face interaction is preferred for its authenticity and depth. Educators highlight that personal feedback allows for more nuanced understanding and tailored support, which is especially beneficial for EFL (English as a Foreign Language) learners. Despite this preference, many participants recognize that AI-enhanced feedback can still be effective and useful, particularly when encouraging students to revise their work or model good writing. Overall, the data suggests that AI tools are viewed as valuable supplements to, rather than replacements for, human feedback in language learning contexts.

**Q4: What AI-based methods or tools (e.g., gamification, adaptive learning systems) have you used to keep EFL students motivated in online learning? How effective were they?**

A strong positive perception of AI tools such as ChatGPT, DeepSeek, Grammarly, and QuillBot emerges from multiple responses. Participants describe these tools as effective, dependable, and useful for enhancing writing and learning outcomes, especially when used consistently and with honest effort. Another prominent trend is the adoption of adaptive learning systems and gamification strategies. These tools are praised for making learning more personalized, engaging, and motivating, with mechanisms like point systems helping to foster both student persistence and a supportive, competitive atmosphere. Additionally, while most participants report actively using these tools, one response notes non-use, suggesting that implementation still varies depending on individual experience or context. Overall, the data points to a growing trust and reliance on AI-enhanced platforms to improve learning efficiency, motivation, and student outcomes, while also indicating that uptake may not yet be universal.

**Q5: How do you think AI could be better integrated into e-learning to enhance motivation for Master 1 EFL students, such as those at Biskra University?**

The interview data highlights a strong consensus on the necessity and value of integrating AI into e-learning, especially for EFL learners at Biskra University. Respondents emphasize that AI is not just an optional enhancement but a "must" to meet modern educational demands. A key trend is the use of AI in the pre-task phase, where it helps students generate ideas, structure responses, and provide examples, thereby supporting the writing process and improving assignment quality. Another major theme is personalization: participants advocate for adaptive learning systems that tailor content to students' skill levels and learning needs. AI is also viewed as a tool to boost motivation and engagement, particularly through features like conversation simulators that allow real-world language practice. Additionally, AI is seen as useful for polishing student work, generating model essays, and acting as a brainstorming assistant. Overall, the data reflects a forward-looking attitude toward AI, with a strong belief in its potential to create more personalized, engaging, and effective learning experiences for EFL students.

## 3.5. Discussion of the results

### 3.5.1. Discussion of Students' Questionnaire

The survey of 30 Master 1 EFL students at Mohamed Khider Biskra University highlights key trends in demographics, e-learning adoption, and learner perceptions. Most participants (51.6%) are aged 23–25, typical for postgraduate students, while 25.8% are 26 or older, suggesting some students balance studies with other commitments. The group is mostly female (74.2%), reflecting broader gender trends in humanities and language education. Nearly all respondents (93.5%) have prior e-learning experience, though 6.5% lack exposure, pointing to potential access or adoption barriers. Moodle dominates as the primary platform (77.4%), followed by Google Classroom (51.6%) and YouTube (48.4%), while Coursera/MOOCs see minimal use (12.9%). Despite this fragmented usage, platforms are primarily accessed weekly (61.3%) for structured tasks like assignments, with only 6.5% engaging daily. A significant minority (32.3%) use platforms rarely, indicating situational reliance rather than routine integration.

While 58.1% view e-learning as more flexible than traditional classrooms—citing asynchronous access and self-paced learning— some students still have doubts: 22.6% expressed uncertainty, and 19.4% disagreed, attributing their stance to technical issues, unstructured formats, or a preference for in-person interaction. Flexibility, convenience, and resource accessibility emerged as key advantages, yet motivation levels are divided. Only 35.5% reported high motivation, 32.3% felt neutral (the largest single group) and 32.3% lacked motivation. Interactive content, such as videos and quizzes (71%), and timely instructor feedback (51.6%) were the top motivators, whereas collaborative learning ranked lowest (29%), underscoring a preference for individualized or instructor-led approaches. Students acknowledged e-learning's strengths but favored traditional classrooms for immediacy and direct communication, revealing a perceived gap in real-time engagement within digital formats.

Technical challenges significantly hinder e-learning effectiveness: 67.7% faced platform issues, 61.3% struggled with internet connectivity, and 58.1% cited motivation or self-discipline gaps. Limited instructor interaction (51.6%) further compounded difficulties, with participants averaging nearly three overlapping challenges, reflecting systemic issues. Feedback delivery was inconsistent: only 29% received sufficient feedback, while 51.6% obtained it occasionally and 19.4% rarely. Students preferred personalized, human-centered

feedback methods—written comments (61.3%), video explanations (54.8%), and live Q&A sessions (54.8%)—over automated quiz responses (45.2%), averaging 2.16 preferred methods per student.

Respondents emphasized the need for improved technical infrastructure (reliable internet, user-friendly platforms), interactive multimedia content (videos, gamification), and targeted training for instructors and learners to enhance e-learning. Strengthening feedback mechanisms and fostering social interaction through discussions or group projects were also prioritized. While e-learning's potential is recognized, addressing technical instability, pedagogical gaps, and engagement deficits is critical to bridging the divide between digital and traditional learning experiences.

### 3.5.2. Discussion of Teachers' Interview

The analysis of the interview data reveals that AI-enhanced e-learning environments positively influence EFL students' motivation, especially when compared to traditional classroom settings. Participants consistently highlighted how AI tools make learning more accessible, efficient, and personalized, allowing students to work independently, receive immediate feedback, and engage more actively in the learning process. This aligns with motivational theories that emphasize the importance of autonomy and competence in fostering learner engagement. Additionally, the modern and trending nature of AI technology itself appears to stimulate interest and enthusiasm among students. However, the data also present a more nuanced perspective, as several challenges were identified. A major concern is the overreliance on AI, which can impede students' development of independent thinking and critical skills. Educators also noted the varying levels of digital literacy among students and teachers, pointing to a need for better training and support. Despite these issues, many participants believe that AI tools can effectively address key e-learning challenges, particularly through personalized feedback, gamification, and adaptive learning systems that help maintain motivation and monitor progress.

Regarding feedback, most respondents favor a blended approach that combines AI-generated responses with traditional face-to-face interaction. While AI feedback is appreciated for its speed and consistency, human feedback remains essential for addressing deeper linguistic and communicative needs, especially in language learning contexts. AI tools like ChatGPT, Grammarly, and QuillBot were praised for their usefulness in improving

writing quality and engaging students, though uptake varied among participants. Finally, there was a strong consensus that further integration of AI into the EFL curriculum—particularly in pre-task planning, content creation, and real-time practice—could significantly enhance motivation and learning outcomes. Overall, the results suggest that while AI holds considerable promise for improving motivation in EFL e-learning environments, its impact depends heavily on thoughtful implementation, digital readiness, and continued teacher involvement.

## Conclusion

This chapter presented the practical framework of the current study, which aimed to investigate the role of AI in enhancing EFL learners' motivation in e-learning. It began by outlining the research methodology adopted, followed by a description of the population and sampling strategies, including both students and teachers from Mohamed Khider Biskra University. The data collection tools—a structured questionnaire for students and a semi-structured interview for teachers—was then introduced, ensuring a comprehensive approach to gathering both quantitative and qualitative data.

The subsequent sections provided a detailed analysis of the collected data. The analysis of the students' questionnaire revealed various insights into learners' perceptions of AI tools and their motivational effects in e-learning environments. Similarly, the analysis of the teachers' interviews highlighted educators' views on the implementation, benefits, and challenges of AI technologies in the EFL context.

Finally, the discussion of the results bridged the findings from both data sets, emphasizing common themes and key differences. Overall, the findings suggest that AI has significant potential in motivating learners, though its effectiveness is influenced by factors such as accessibility, user familiarity, and pedagogical integration. These results set the stage for the following chapter, which will provide general conclusions, pedagogical implications, and recommendations based on the study's outcomes.

## General Conclusion

This research explored the role of Artificial Intelligence (AI) in motivating English as Foreign Language (EFL) learners within an e-learning context, focusing on Master 1 students of English at Mohamed Khider Biskra University. Given the increasing presence of AI technologies in education, the research aimed to assess how these tools can enhance learner motivation, a key factor in language learning success and overall academic performance.

The first chapter offered a detailed theoretical foundation by outlining the evolution of AI in education and presenting various AI-powered systems, such as adaptive learning platforms, intelligent tutoring systems, chatbots, and feedback mechanisms. These technologies were analyzed based on their alignment with modern educational practices and their capacity to support personalized, engaging, and learner-centered experiences. Furthermore, the chapter examined how AI tools can address motivational challenges commonly faced by EFL learners.

In the second chapter, the study focused on motivation, discussing its main types and theoretical frameworks, including Self-Determination Theory, Goal Orientation Theory, and Expectancy-Value Theory. The chapter also applied the ARCS motivational model to understand how AI features can help capture learners' attention, build confidence, ensure relevance, and increase satisfaction. Potential drawbacks of AI use, such as decreased social interaction, lack of transparency, and technology-related anxiety, were also critically examined. Several strategies were proposed to overcome these challenges and make AI integration more effective and learner-friendly.

The third chapter presented the practical part of the research, which included data collected through a questionnaire for students and interviews with teachers. The analysis showed that students generally had positive perceptions of AI tools, particularly regarding receiving immediate feedback, personalizing learning paths, and maintaining engagement. Teachers, on the other hand, acknowledged the potential of AI to support learner motivation but also pointed out concerns regarding the overuse of technology, unequal access, and insufficient training.

In summary, the findings support the initial hypothesis that AI can play a significant role in enhancing learner motivation in online EFL settings, provided it is implemented with clear educational objectives and consideration for ethical and practical challenges. The study highlights the importance of using AI as a complement to, rather than a replacement for,

human instruction. It also encourages a thoughtful, inclusive approach to integrating AI into language learning environments.

Future studies are recommended to explore the long-term effects of AI in education, compare its impact across different institutions, and further refine best practices for using AI to support motivation in diverse learning contexts.

**Recommendations**

Based on the findings, the following recommendations can be derived:

- Teachers should integrate AI-powered platforms (like intelligent tutoring systems and chatbots) to offer personalized support, feedback, and learning pathways that align with students' individual needs and motivations.
- While AI can enhance efficiency, teachers must continue to provide humanized, encouraging feedback to maintain emotional engagement and prevent learner isolation in e-learning environments.
- Teachers should encourage students to explore and use AI tools independently, helping them become more self-directed and motivated in their language learning.
- Learners should take advantage of AI tools (e.g., Duolingo, Grammarly, ChatGPT) to practice English skills regularly, especially outside of formal lessons.
- Students should treat AI-generated feedback as an opportunity for improvement and use it constructively to enhance their language performance.
- While AI supports learning, students should continue interacting with teachers and classmates to develop communication skills and maintain motivation.

**Limitations of the Study**

Despite the valuable insights provided by this research, several limitations should be acknowledged. It involved a small sample of Master 1 students of English and a few teachers from Mohamed Khider Biskra University, which limits how broadly the findings can be applied. The research relied mainly on qualitative, self-reported data through questionnaires and interviews, which may include bias and does not fully capture the broader or measurable impact of AI on motivation. Additionally, the study did not assess motivation or language performance before and after using AI tools, so findings are based on perceptions rather than objective outcomes. Finally, due to the rapid development of AI, newer tools may have emerged that were not included in the study.

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## Appendix A

## Students' Questionnaire

Dear Master 1 students,

This questionnaire is designed as part of a research study to gather valuable insights on e-learning and student motivation.

Your participation is greatly appreciated, as your responses will contribute to the completion of this Master's Dissertation.

All responses will be kept strictly confidential and used only for academic purposes.

Thank you for your time and cooperation.

**Section one: General information**

**Age:**

- 20 - 20
- 23 – 25
- 26 and above

**Gender:**

- Male
- Female

**Have you previously engaged in e-learning as part of your academic studies?**

- Yes
- No

**Section Two: E-learning Experience**

This section assesses participants' familiarity with and usage of e-learning platforms.

**Which e-learning platforms have you used during your academic studies?**

☐ Moodle

☐ Google Classroom

☐ Youtube

☐ Coursera / MOOCs ( Massive Open Online Courses)

**How frequently do you use e-learning platforms for academic purposes?**

- Daily
- A few times per week
- One per week
- Rarely
- Never

**In comparison to traditional classroom learning, do you perceive e-learning as more flexible?**

- Yes
- No
- Maybe

**In your opinion, what are the primary advantages of e-learning for academic success?**

……

**Section Three: Motivation and Engagement in E-Learning**

This section examines the impact of e-learning on learners' motivation and engagement

**On a scale of 1 to 5, how motivated do you feel when engaging in e-learning activities?**

Not motivated at all ○ ○ ○ ○ ○ Highly motivated

**Which of the following factors contribute to your motivation in an e-learning environment?**

☐ Interactive content (videos, quizzes, discussions)

☐ Timely feedback from instructors

☐ Self-paced learning opportunities

☐ Gamification elements (badges, leaderboards, rewards)

☐ Collaborative learning with peers

**Do you find e-learning more engaging compared to face-to-face learning? Please explain your response?**

……

**Section Four: Challenges and Limitations of E-Learning**

This section identifies potential obstacles to motivation in e-learning environments.

**What challenges have you encountered while using e-learning platforms?**

☐ Limited interaction with instructors

☐ Internet connectivity issues

☐ Technical difficulties with platforms

☐ Lack of motivation or self-discipline

☐ Difficulty comprehending online content

**In your opinion, what measures can be taken to address these challenges and improve the e-learning experience?**

……

**Section Five: Feedback and Recommendations**

This section gathers insights on feedback mechanisms and potential improvements in e-learning.

**Do you believe that you receive sufficient feedback from instructors in e-learning courses?**

- Yes
- No
- Sometimes

**Which method of feedback do you find most effective for maintaining motivation in e-learning?**

☐ Written comments on assignments

☐ Video explanations from instructors

☐ Live discussions and Q&A sessions

☐ Automated feedback from quizzes and assessments

**What suggestions do you have for improving e-learning to enhance student motivation?**

…….

## Appendix B

## Teachers Interview

Dear Teacher,

I sincerely appreciate your time and willingness to participate in this interview. This study aims to explore the role of artificial intelligence in enhancing EFL learners' motivation in e-learning. Your insights as a teacher will be invaluable in understanding the challenges and benefits of e-learning.

Your responses will be used solely for academic purposes. Please feel free to provide as much detail as you deem necessary.

Thank you again for your valuable contribution.

- **How does e-learning, particularly with AI tools, affect students' motivation compared to traditional classroom learning in EFL contexts?**

…….

- **What are the biggest challenges you face when teaching English through e-learning and how might AI tools help address these challenges?**

…….

- **How do you provide feedback to students in e-learning (e.g., via AI-driven platforms like automated essay graders or chatbots)? Do you think AI-enhanced feedback is as effective as face-to-face feedback for EFL learners?**

…….

- **What AI-based methods or tools (e.g., gamification, adaptive learning systems) have you used to keep EFL students motivated in online learning? How effective were they?**

…….

- **How do you think AI could be better integrated into e-learning to enhance motivation for Master 1 EFL students, such as those at Biskra University?**

…….

**ملخص**

تهدف هذه الدراسة إلى استكشاف دور الذكاء الاصطناعي في تعزيز دافعية المتعلمين ضمن بيئات التعلم الإلكتروني، مع التركيز على طلبة السنة الأولى ماستر لغة إنجليزية بجامعة محمد خيضر بسكرة. ومع تزايد استخدام أدوات الذكاء الاصطناعي مثل نظم التعليم الذكية، والدردشة الآلية(Chatbots) ، وتحليلات التعلم في المجال التربوي، تسعى هذه الدراسة إلى فهم كيفية تأثير هذه التقنيات على دافعية متعلمي اللغة الإنجليزية كلغة أجنبية. استخدمت الدراسة منهجًا نوعيًا من خلال استبيان موجّه للطلبة ومقابلات شبه مهيكلة مع مجموعة من الأساتذة

أظهرت النتائج أن أدوات الذكاء الاصطناعي تساهم في تحسين دافعية المتعلمين من خلال تقديم تغذية راجعة مخصصة، وتشجيع التعلم الذاتي، وزيادة التفاعل. ومع ذلك، برزت بعض التحديات مثل ضعف الكفاءة الرقمية لدى بعض المتعلمين، والاعتماد المفرط على التكنولوجيا، ونقص التفاعل البشري. توصي الدراسة بدمج فعّال لأدوات الذكاء الاصطناعي من قبل الأساتذة والطلبة على حد سواء. وعلى الرغم من القيمة التي تقدمها هذه النتائج، إلا أن الدراسة تظل محدودة من حيث حجم العينة، واعتمادها على بيانات ذاتية، إلى جانب التطور السريع في تقنيات الذكاء الاصطناعي. وتساهم هذه الدراسة في تعزيز الفهم حول كيفية دعم الذكاء الاصطناعي لجوانب الدافعية في تعلم اللغات في مؤسسات التعليم العالي

***الكلمات المفتاحية:*** الذكاء الاصطناعي، الدافعية، التعلم الإلكتروني، اللغة الإنجليزية كلغة أجنبية ، التغذية الراجعة، التعلم الذاتي