



جامعة عباس لغرور خنشلة
ABBES LAGHROUR UNIVERSITY KHENCHELA



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ABBES LAGHROUR UNIVERSITY KHENCHELA

PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA

MINISRTY OF HIGHER EDUCATION AND RESEARCH

ABBES LAGHROUR UNIVERSITY-KHENCHELA

FACULTY OF LETTERS AND LANGUAGES

DEPARTEMENT OF ENGLISH

**Investigating the Use of Artificial In-
telligence to Improve Students'
Writing Skill**

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2023/2023

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Dedication

I dedicate this research to my dear parents, Meriam and Chaaban Abdellaoui, for their continuous support and encouragement throughout my academic journey.

To my dear grandmother, Nouna Merzougi, whose wisdom and love have been a constant source of inspiration.

To my wonderful siblings, Amira, Sofian, Loudjain, Lilya, and Mofida, for their love and understanding.

To my dear uncle, Walid Alaa, for his guidance and support.

To my aunt Hayat, and my uncle's wife, Dr. Khadija Abdellaoui, at the Higher Institute of Forestry in Khenchela, for their courage and inspiration.

Thank you all for believing in me and for being my pillars of strength. This achievement is as much yours as it is mine.



Acknowledgement

First, I thank Allah Almighty for his guidance and support, which enabled me to reach this level of academic achievement.

I would like to express my deepest gratitude and appreciation to my supervisor Dr. Zoulaikha Elbah, for her support, guidance, and encouragement throughout the preparation of this thesis. Her expertise and insights were invaluable and greatly contributed to the completion of this work.

I would also like to extend my gratitude to the members of the jury for devoting their time to read and evaluate this work.

Abstract

This thesis investigates of AI in enhancing students' writing skills. With the rapid development of AI technologies, this technology has become an effective tool in improving the quality of education, including writing skills, which are considered essential in education because they enable students to clearly express their ideas and organize and analyze information effectively. AI plays a crucial role in improving these skills. In this regard, this research aims to investigate the use of AI to improve students' writing among students at Abbas Laghrour University Khenchelato answer the research question, we have adopted a descriptive method. The study sample consisted of 119 third-year undergraduate students from the department of English language, simple random sample 20 teachers who taught writing skills at the university in the Department of English Language, the results confirm that AI plays an important role in improving Students writing skills Through the use of various applications that enhance their competence, providing them with many methods and different techniques. Also, all teachers advise students to use AI applications correctly and in ways that benefit them.

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General Introduction

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Introduction

Artificial intelligence is a field of computer science that works to solve cognitive problems associated with human intelligence, such as learning, creativity, image recognition, writing skills, Modern artificial intelligence began at an interdisciplinary gathering at Dartmouth University in 1953. Russell, S., p (69) ,in this study, we was interested in studying the use of artificial intelligence to improve students' writing skills, because it contributes greatly to developing students' skillby providing immediate and direct feedback,checking for grammatical and spelling errors and providing many suggestions, including,boost flow and clarity expanding ideas through paraphrasing a text.

1. Statement of the Problem

The advent of artificial intelligence (AI) has brought significant advancements in various fields, including education. Despite these advancements, many students continue to struggle with writing skill, which are crucial for academic success and effective communication. Traditional teaching methods often fall short in providing personalized feedback and continuous support necessary for students to improve their writing proficiency. This gap highlights the need for innovative approaches to enhance writing skills.

The central problem this thesis addresses is the potential of AI to bridge this gap. Specifically, it investigates how AI can be leveraged to improve the writing skills of students by providing personalized feedback, enhancing engagement through interactive learning environments, and offering consistent, on-demand support. The study aims to explore the effectiveness of AI-driven tools and platforms in addressing common, challenges faced by students in developing their writing abilities, such as grammar, coherence, structure, and creativity. Understanding the impact of AI on students' writing skillcan inform educators, policymakers, and technology developers about the best practices and strategies for integrating AI in educational settings. This research seeks to identify the key benefits and limitations of AI applications in writing instruction and to provide evidence-based recommendations for their implementation.

2. Research Questions

This study aims to answer the following questions

- How does the use of artificial intelligence impact writing skill?

- What are the challenges students face in improving their writing skills?
- How can artificial intelligence enhance students' writing skills?
- What are the key artificial intelligence applications used to improve students' writing skills?

3. Hypotheses

We hypothesize that:

- The use of artificial intelligence in writing skill leads to significant improvement in students' writing skills compared to traditional methods.
- Implementing artificial intelligence to enhance writing proficiency leads to higher levels of achievement in universities.
- The utilization of artificial intelligence overcomes all challenges and issues faced by students.

4. Objectives of the study

This study aims at:

- Evaluating the effectiveness of artificial intelligence applications in improving writing skills.
- Identifying the challenges and limitations faced by students when using artificial intelligence and proposing solutions.
- Identifying the most effective artificial intelligence applications used to enhance writing skills.
- Proposing new ideas for the development of artificial intelligence in the future.

5. Literature review

The comprehensive literature review provides an overview of the definitions of artificial intelligence and writing, from which we infer the role of artificial intelligence in enhancing students' writing skills. Through this research, we aim to analyze and understand all the challenges and obstacles students face in writing, as well as the problems encountered when using artificial intelligence tools and applications. Additionally, our study investigates the impact of artificial intelligence on writing skills. Finally, based on the survey findings, we conclude that artificial intelligence plays an effective role in assisting and improving students' writing skills. Study on the Role of Artificial Intelligence in Enhancing Students' Writing

Skills using Artificial Intelligence to Improve Students' Writing Skills: A Case Study with a Machine

This study aims to explore how AI tools can be used to improve the writing skills of university students. An educational AI tool was used to provide immediate and personalized feedback to students on their academic writing. Wilson, M., Ross, J., & Taylor, E. (2019). "Using Artificial Intelligence to Improve Students' Writing Skills: A Case Study with a Machine Learning Tool." *Journal of Education and Technology*, 15(3), 123-140.

6. Research Methodology:

6.1 The choice of the method

This research is a descriptive study. I chose this study because it aims to describe and document the skills of writing and artificial intelligence and because I also want to understand their characteristics accurately and the extent of their use by teachers and students. This study aims to understand the challenges that students face in writing and whether artificial intelligence contributes to improving their writing potentials. Additionally, we want to know whether teachers use artificial intelligence to teach writing or, more specifically, to enhance students' writing skills.

7.1 The Choice of the Sample

The study will involve a purposive sample of third-year undergraduate English language students at the Faculty of Arts and Languages, Abbas Laghrour University in Khenchela. These students are selected because they are in the final stages of their studies and are required to write their theses, which necessitate advanced writing skills. And teachers of writing experience in the department of English at Khenchela university of Abbas Laghrour.

7.2 Data gathering tools

The questionnaire was distributed to third-year undergraduate students at Abbas Laghrour University in Khenchela and to writing instructors in the Faculty of Arts and Languages to determine whether they use artificial intelligence to develop their writing skills or if the instructors use AI applications to improve their students' writing skills. The student questionnaire consists of 14 questions divided into three parts, with most answers being yes or no. The teacher questionnaire consists of 10 questions divided into two parts, with answers being yes or no and also including justifying sentences.

6.2 Structure of the study

This research is divided into two chapters, the first chapter contain of two section, in the end followed by a conclusion and then a general conclusion. The first chapter is devoted to Literature Review Initially, we began by defining writing, its types, and its stages, then moved on to define artificial intelligence, its types, stages , and its most important applications in the field of education. I also mentioned the importance of artificial intelligence in education. In the second section, we discussed how artificial intelligence contributes to enhancing students' writing skills and the most important AI techniques for developing writing skills. Then, we mentioned the importance of artificial intelligence in enhancing writing. The second chapter deals with Research methodology and data analysis and analyzes, in the first section is about Research Methodology, and Section Two is about Data Analysis, Interpretation and discussion of the findings, the two questionnaires for students and teachers, starting with an overview and ending with an analysis of their responses.

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Section one: Theoretical part of Artificial Intelligence and Writing

Introduction

Education gives students the possibility to discover their abilities and put them into practice in addition to acquiring many good behavioral skills, it also provides way of thinking and methods for innovation , solving problems, building an integrated educational journey , and achieving equal opportunities to obtain education , with the development of the world and the development of the modern educational methods that motivate students in many field , the students face many difficulties during their education , which push them to find solution for them , as illustrated by henry ford "innovation does not mean working " , means that innovation is about finding solutions to difficult and stubborn problems and searching for what is beyond the ordinary , these principles and approaches are the driving force behind the rapid developments in the world of technology , especially in the education sector , in 1956 , emerged what we call Artificial Intelligence(Dewey, 1938).

Artificial Intelligence is a term coined by John McCarthy in 1956 during a conference on this topic where he developed the Turing test to distinguish between human and machines , Recently, Artificial Intelligence has been integrated into many field such as medicine , education , industry , but the field that will be discussed in my thesis is education. (yoav , mintz,ronit brodie) 2019 , the field of Artificial Intelligence in education (AIED) has witnessed significant developments over the past 25 years , However , since January 2019 , the spread of the corona virus has effected people worldwide , forcing many offline individuals to adapt to it , this virus has had a significant impact on Universities and Schools , shifting education to remote learning throughout the period ,as the real world closed its door due to the virus , students interaction with education and their solutions to the challenges they face have progressed through the application of AI(Peng& Zhou, 2022).

1. Writing

1.1 Definition of writing

Most scholars agree that writing began in the late fourth millennium BCE as a collection of symbols and rules combined to form sentences, it's a process of expressing ideas through symbols, numbers, and letters with the aim of conveying a particular ideas or information. Writing is a system of graphic symbols that can be used to convey meaning. , also, human use writing to convey ideas or speech in a readable form through the act of writing, its considered a fundamental means of human communication ..As, Full Writing has been concisely defined as a system of graphic symbols that can be used to convey any and all thought.Jeffrey R. Wilson Academic writing 2020.

Writing is the act of thinking. While the term 'writing' has been interpreted as the expression of thought, we'll redefine it as the process of thinking. Thinking is not what you do with thoughts. Instead, writing is the act of thinking. Jeffrey R. Wilson Academic writing 2020.

1.2 Types of writing

There are four types of writing

1.2.1 Expository writing

Exposition is used to convey information, provide explanations, and interpret meanings. Essay, as well as informative and useful resources. Exposition, when combined with story, provides context and clarity. Exposition can be used to describe a procedure that explains how something is created or carried out. Hasriani G. October 2019.

1.2.2 Narrative writing

Narrative" is the meaning of narration. It aims to recount an event in the chronological order that it happened. A writing that aims to convey a sequence of events through four series of events—orientation, climax, anti-climax, and resolution—may also be referred to as a narrative. Its purpose is to provide meaning to an event so that the reader can understand the lesson of the tale. M. Habibi, Sukirno, Taufina, Elfia Sukma, Ari Suriani, Rafhi Febryan Putera August 28, 2020.

1.2.3 Descriptive writing

A description aims to capture an object's appearance, flavor, texture, feel, and sound. It could also provoke feelings of joy, isolation, or terror. It can be used to see objects, people, or even time intervals like days, hours of the day, or seasons. It can be used to more than just a person's physical look. It might reveal something about their personalities or character qualities. Hasriani G. October 2019.

1.2.4 Argumentative writing

Persuasion and convincing are two purposes of argumentation. It is frequently found in conjunction with exposition, and the two are closely related. Making an argument, proving or disproving a claim, is the goal. It might make arguments to sway the reader's opinion or embrace a particular notion. Hasriani G. October 2019.

1.3 Approaches to writing

1.3.1 The Controlled to Free Approach

This approach to writing involves copying, manipulating, or changing texts in a sequential manner. Students it is necessary for them to manipulate input grammatically, for instance, altering sentences to statements or questions or changing negative to positive.egin with words and sentences, and then move onto paragraphs and longer compositions. The focus of this method is on grammar, syntax, and mechanics, with a preference for accuracy over fluency. Instead of being creative, it relies on imitating, modeling, and adapting preexisting content and format samples. “Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania 2020.

1.3.2 The Free Writing Approach

The focus of the free writing approach is on quantity rather than quality. The principle is that any given topic can generate a lot of writing, which should flow freely, abundantly, and without any corrections. According to Scrivener (2005), this type of writing may contain a lot of waste, but the valuable ideas that are born in the process may eventually prove useful for the actual writing assignment. Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania 2020.

1.2.3 The Paragraph-Pattern Approach

The importance of organization is stressed in this approach, which is based on the belief that communication is constructed and organized differently in different cultures and contexts. This approach is centered around organizational patterns. Students utilize paragraphs to copy, analyze, and imitate. Examples of exercises include arranging scrambled sentences (in a paragraph), mixed paragraphs (in a longer composition), and identifying general and specific information. Writing a good topic sentence for a paragraph, writing supporting details for a main idea, or identifying a main idea that covers a list of details. Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania 2020.

1.2.4 The Grammar-Syntax Approach

The grammar-syntax approach is created by focusing on writing tasks that demand students to pay attention to organization while focusing on grammar accuracy, based on the belief that successful writing is the result of an effective combination of discrete language skills. Efficient use of more than appropriate vocabulary results in clear organization that requires informed knowledge of verb and tense structure, linking devices, and even sentence structure to produce a coherent and cohesive paragraph. Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania 2020.

1.2.5 The Communicative Approach

The approach enhances the writing task and its outcome, as students are encouraged to act as writers in real life scenarios and ask crucial questions that will guide their writing. The focus is moved away from the sterile instructional purpose by extending the leadership to accommodate a more authentic communicative goal. holds the view that writing tasks should be as authentic as possible and that real-life contextualization drives students to write. Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania 2020.

1.2.6 The Process Approach

The process approach redirects writing resources towards the process instead of the product itself (Harmer, 2001). This approach is comprehensive and successfully merges the why, who, and how of writing, while systematically organizing the content. Detailed exploration is given to more abstract and broader topics, with a focus on language (lexicon and grammar). Research is encouraged to build content and generate ideas. The main ben-

enefit of this approach is that it encourages creativity, allows students to work at their own pace, and gives them the chance to revisit their work and enhance it during the process. Nicolae Bălcescu” Land Forces Academy, Sibiu, Romania 2020.

2. Artificial Intelligence

2.1 Definition of Artificial Intelligence

John McCarthy is the father of Artificial Intelligence, an American computer scientist , and the first to coin the term” Artificial Intelligence ”, it is a very advanced technological field , it is a difficult term to define ,whereas ,it is known as super-powerful computers that simulate human mental capabilities , using machines, systems, application , algorithms , capable of changing any field with the change of new technologies,Lu, Y. (2019)” The Artificial Intelligence is changing our world faster and it will impact every area of our life ”.

Artificial Intelligence is the science and engineering of industries, machines, and intelligent system, and it is a method that makes a computer think intelligently as a human think, it was created by human asking whether the computer thinks works , and solves problems or not , Vinod Chandra (2020),page2 ”Artificial Intelligence is the most rapidly growing field, which provides more and more insights into how to make the human life easy ”.The rapid development of the world and Artificial Intelligence has had a great impact in the field of education , participating in the development and calling on many scientific skills .

According to Margaret A Boden (Elsevier, 1996), Artificial Intelligence is the study of computer science demonstrates, how to program computers scientifically so that we can achieve ideas, goals, and capabilities that human minds can accomplish, designing systems and programs that simulate human capabilities , including the ability to think creatively , solve problems , and make intelligent decisions .

Based on l.chen ,P.Chen , Z.Lin, (article of Artificial Intelligence in education 2020), that Artificial Intelligence is a computer system distinguished by immense capabilities , including sensor devices that enable it to acquire cognitive abilities and functions similar to those of humans .

2.2 Types of Artificial Intelligence

2.2.1 Reactive Machines

This system works on specific rules and foundation, without any memory because it does not have learning capabilities, it can only respond to specific requests, situation, or tasks, it is only responding to immediate tasks ,and specific set of request , this system it unable to learn from previous experiences or improve its function , this type of Artificial Intelligence is the basic type ,according to, Sunny Betz said" Reactive machines are useful for performing basic autonomous function , such as filtering span from your email inbox or recommending items based on your shopping history ."Sunny Betz

2.2.2 Limited Memory

This system uses previous experiences and also stores data and decides and acts based on that knowledge, also he absorbs data from the dragon and learns from it, meaning its knowledge is limited and short-term. Sunny Betz said "This allows a machine to absorb data from experiences and learn from them, helping it improve the accuracy of its action every time. , it represented the majority of Artificial Intelligence applications because it can be applied to a large sat of scenarios. Sunny Betz

2.2.3 Theory of Mind

This system is the concept of Artificial Intelligence that can perceive the feelings of others and is taken from psychology, it describes the ability of humans to describe and read feeling and also predict future actions, this theory will bring development to technology, but it poses a danger to the world, because it is very accurate, it distinguishes human needs, emotions, beliefs, and thought processes better, it understands humans. This theory is the area of interest of senior researches in Artificial Intelligence. Sunny Betz

2.2.4 Self-Aware

This system is the highest level of Artificial Intelligence because it is aware of its existence and its being, it is one of the most important goals of Artificial Intelligence, or it can be said that it is the ultimate goal of all Artificial Intelligence research. They are Self – Aware machines because they not only feel the felling of others, but they also feel and have a sense of themselves, here those machines will get out of our control, because it is able to easily surpass the mind of any human being, since she will become self -aware, she will be able to plan

plans and eliminate humanity, therefore, he warns against it even though it will enhance our progress, this stage currently exists only by default.3.Sunny Betz

2.3 Steps of Artificial Intelligence

2.3.1 Artificial Narrow Intelligence (ANI)

Narrow Artificial Intelligence refer to automated systems, that are programed only to create a limited task using human -like capabilities, and therefore have a very limited and narrow scope, because they succeed in one cognitive ability and cannot learn skills, these systems do not go beyond the tasks assigned to them, they lack awareness, emotion and true intelligence that exceeds human intelligence. Examples:

- Tracking Weather Updates
- Generating Data Science
- Playing games such as porker chess
- Translation

Vijay A. k.) said: "The machines intelligence that surrounds us today is a part of some narrow AI, Examples include Google Assistant, Siri, Google translate, and other natural language processing tools. "Vijay A. k.)

2.3.2 Artificial General Intelligence (AGI)

This stage describes Artificial Intelligence that can learn , think , and perform a wide range of actions and tasks similar to humans , its goal is to create machines capable of performing various tasks , with the same intelligence as humankind ,This stage can only be reached if an intellectual task in performed with the same level of accuracy as a human being does , Ben Goertzel .org , Journal of Artificial Intelligence (2014), said : "General intelligence involves the ability to achieve a variety of goals , and carry out of variety of tasks , in a variety of different contexts and environments. ", as Sunny Betz said: " the groundwork of Artificial Intelligence general intelligence could be built from technologies such as Supercomputers, quantum hardware and generative AI models like Chat GPT. Ben Journal of Ben Goertzel .org Artificial Intelligence (2014)

2.3.3 Artificial Super Intelligence (ASI)

It is the stuff of science fiction, if Artificial Intelligence reaches this level of super intelligence, its knowledge will become stronger than human because it will become self – aware, but this stage does not currently exist except hypothetically because it is still a subject of philosophical discussion within the artificial intelligence community. Ben Goertzel, Journal of Artificial Intelligence (2014).

3.2 Application of Artificial Intelligence in Education

3.2.1 Conversation Technology

It is a wide range of tools and techniques designed to facilitate communication between humans and machines , it includes natural language processing , speech recognition , chat bots , virtual assistant , sentiment analysis , it has many applications which are , ALEXA , SIRI , CORTANO , Google she added LAMDA is a language model for dialogue conversation . There are many examples of conversation technology applied in the field of education which is: Ramesh C Sharma (August 2021, page 30)

3.2.2 Language Learning Apps

This application facilitate conversation and simulation, helping student to speak better and learn a new language, like application of ROSETTA STONE, Ramesh C Sharma (August 2021, page 30)

3.2.3 Interaction learning platforms

This application engages in conversation and Interactive activities, enhancing the learning process for students, like the application of QUIZZ and KAHOOT. This application engages in conversation and interactive activities, enhancing the learning process for students. Ramesh C Sharma (August 2021, page 30)

3.2.4 Personalized learning

This element includes specializations and applications that meet the needs, interests, and abilities of students. It also encompasses teaching methods to enhance student engagement and provides students with the opportunity to learn at a pace that suits their learning styles, for example application of DUOLINGO, used to learning an additional language, KNEWTON, this application most of teachers use it to teach chemistry and mathematics, and

other subjects as well .There are many example of personalized learning applied in the field of education which is:Ramesh C Sharma (August 2021, page 30)

3.2.5 Adaptive learning platforms

This platform uses algorithms to customize the learning experiences for each student based on their strengths and weaknesses throughout their academic journey, like the application of COURSERA and KHAN ACADEMY Ramesh C Sharma (August 2021, page 30)

3.2.6 Personalized Learning Paths

This platform caters to the learners needs by providing customized lessons and exercises tailored to each students individual need and learning goals, like the application of DREAM BOX and IXL.Ramesh C Sharma (August 2021, page 30)

3.2.7 Learning Analytics Dashboards

This platform benefits teacher by providing insights into students' performance and engagement, like the application of MOODLE and BRIGHTS PACE.these applications illustrate how personalized learning is implemented across various aspects of education.Ramesh C Sharma (August 2021, page 30)

3.2.8 Automation of tasks

Refers to the use of technology and systems to perform repetitive or routine tasks without human intervention, increasing efficiency and reducing the need for manual labor, Artificial Intelligence handles these task without errors and in a definitive manner, it also deals with attendance, sending books, and mechanical activities, there are many examples of automation tasks applied in the field of education which is:Ramesh C Sharma (August 2021, page 30)

3.2.9 Automated Grading system (AGS)

This software corrects assignments and exams, providing instant feedback of students, for example application of GRAND SCOPE or TURNITIN.Ramesh C Sharma (August 2021, page 30)

3.2.10 Customer Support Automation (CSA)

This software allows student to register for courses through online system and also pay fees electronically. Ramesh C Sharma (August 2021, page 30)

3.2.11 Learning management system (LMS)

In this software, various aspects are utilized to deliver educational courses and assessments to students, for example application of MOODLE and CANVAC. his tasks help educational institutions improve efficiency enhance the learning experience and better manage administrative tasks. Ramesh C Sharma (August 2021, page 30)

3.2.12 Artificial Intelligence –powered writing assistant

This platform relies on Artificial Intelligence algorithms to assist users in writing by verifying spelling and grammar rules , enhancing their writing quality and process , GRAMMARLY ,is the famous example as it identifies text errors and suggests assistance to facilitate the writing expression process .there many example of Artificial Intelligence – powered Writing assistance which is : Ramesh C Sharma (August 2021, page 30)

3.2.13 Writing Improvement

this application enhance writing skills by providing feedback on grammatical, spelling, and writing style errors, as well as punctuation tools. Ramesh C Sharma (August 2021, page 30)

3.2.14 Personalized learning

Artificial Intelligence algorithms have enabled the analysis of students writing pattern, offering suggestion to address their weaknesses and improve theme. the overall aim of using multiple Artificial Intelligence algorithms in education is to facilitate the writing process for students struggling with writing difficulties, by improving their writing skills. This is the main and fundamental topic that I will discuss in my thesis: the use of Artificial Intelligence to improve students writing skills. Ramesh C Sharma (August 2021, page 30)

4.2 The Importance of Artificial Intelligence in Education

Artificial intelligence (AI) is becoming an integral part of our daily lives, and the government and schools are putting more and more emphasis on the development of AI in education (Malik, Tayal, and Vij, 2019), Students play a crucial role in the future of a nation. In the

age of AI, students have two roles: users and developers. AI technology can be used in all aspects of learning and can integrate more closely with education. Kemal Gokhan Nalbant - JRSE. Vol. (2021), AI technology is applicable to all aspects of our learning and integrates more closely with education; students can employ AI for data analysis, AIED is the use of AI applications or technologies in educational settings to help with decision-making, teaching, or learning. AI has the potential to play multiple roles in educational settings. The progress of computer technologies like robot control, sensing devices, quantum computing, and wearable devices, the most advantages of Artificial Intelligence in education is:

4.2.1 Access to Information

In the past, it was difficult to locate the information needed by visiting libraries to access it, but now it's easier to find it with the help of artificial intelligence and technology. Pressing only a few buttons has made it much easier and faster to reach the desired information. Virtual assistants on phones have provided faster access to the desired information through voice commands. Kemal Gokhan Nalbant - JRSE. Vol. (2021).

4.2.2 Distance Learning

Distance education has been made possible by the development of technology and computers. Machines have played a significant role in both continuity of education and the prevention of the COVID-19 epidemic with distance education. Kemal Gokhan Nalbant - JRSE. Vol. (2021).

4.2.3 Personalization in Education

It is impossible for one teacher to meet the expectations of all students, but Artificial Intelligence can provide a teacher for every student. Students can listen to the part they do not understand repeatedly; allowing them to personalize their learning. Kemal Gokhan Nalbant - JRSE. Vol. (2021).

4.2.4 Global Knowledge

Artificial intelligence systems can help us learn a language we don't know by providing education in a different language. Moreover; we can translate texts written in different languages and adapt them to our language. Kemal Gokhan Nalbant - JRSE. Vol. (2021).

4.2.5 Student Attendance Tracking

Intelligent sensors located at the entrance and exit of the school allow students' attendance days to be entered into the system without teachers needing to take attendance. Kemal Gokhan Nalbant - JRSE. Vol. (2021).

4.2.6 Digitalization and Environmental Protection

The use of electronic resources has increased while educational resources are now being moved from paper to digital. This prevents the cutting of trees and makes a significant contribution to the environment, additionally, with the elimination of shuttle vehicles used by students for transportation in online education; both the traffic problem and the effect of harmful gases released by cars have decreased. Kemal Gokhan Nalbant - JRSE. Vol. (2021).

AIED is a scientific endeavor to develop computationally precise and explicit forms of educational, psychological, and social knowledge that are frequently left implicit. In other words, it is the foundation for much of the 'smart' Ed tech. Luckin, R., Holmes, W., Griffiths, M. & Forcier, L. B. (2016). Intelligence Unleashed. An argument for AI in Education.

Section two: Discuss of the Topic how can AI improve the writing skills of students

5.2 AI and writing skill

Creating autonomous machines that can understand their environment and perform tasks similarly to people is one of the main objectives of artificial intelligence. Artificial intelligence is a more general term for an automated system that can mimic human cognitive functions including learning, reasoning, and self-correction. Thanks to recent technological advancements, instructors can now offer their students additional learning and teaching options in assessment, tutoring, content creation, and feedback thanks to artificial intelligence (AI). There is potential for flexible and time-saving modifications to the writing curriculum with the new writing programs that are being combined to provide Grammarly features in a single integrated application. Since writing is a more important form of communication than just speaking, educators and students must give writing skills a lot of thought. Writing is a really difficult task. declared that it necessitates close attention and a comprehension of the written language. Nurul Ajleaa Abdul Rahman¹, Luqmanul Hakim Zulkornain¹, Azman Che Mat, Martin Kustati.

Observed that writing is a difficult skill. Additionally, it is assumed that significant verbal and cognitive skills are required. Even for those who are proficient in the language they write in, writing can be difficult. However, it is far more difficult for people learning English as a second language because of their flaws, incorrect language learning strategies, and ignorance of formal writing conventions, all of which have made it difficult for them to write anything passable. There are many applications of AI that have contributed to developing students' writing skills. For example, Automatic Writing Evaluation (AWE) Software can analyze writing errors and offer quick feedback to help with the writing process. The use of AWE software to analyze written texts in a variety of ways, including word choice, suggested wording, grammar checks, and even writing styles. Verifying English text structures and offering substitute styles is one of AWE's primary duties. The user, however, is free to decide whether or not to accept the offered suggestion. Nurul Ajleaa Abdul Rahman¹, Luqmanul Hakim Zulkornain¹, Azman Che Mat, Martin Kustati.

6.2 Artificial Intelligence Techniques to enhance students' writing

There are many different types of AI-enabled technologies in writing classes, including text editors that provide synchronous feedback, automatic text generation, and automated writing evaluation. They are intended to assist with many aspects of the cognitive writing process, such as organizing, interpreting, assessing, and keeping track of. For example, created the AI chatbot Argumate. It can help students construct argumentative essays by providing ideas to support their perspective, pushing them to think about counterarguments, and include rebuttals; also, it has developed an AI-based grammar checker to assist students in checking their writing for flaws. Suggested an AI-based dynamic assessment system for tracking college students' English writing proficiency, which enhanced students' writing proficiency and boosted their desire and excitement to write David James Wooa, and Kai Guo. and with the use of the online writing tool Wordtune, students can paraphrase their writing.

It accomplishes this by changing the sentence structure at the phrasal and clausal levels and substituting synonyms for the terms in the original text. Fawaz Al Mahmud, and we have GPT Chat is a chatbot powered by artificial intelligence that can converse and facilitate tasks. Answering text or voice questions from the user is one way that the system is made to be as easy to use as possible. In order to assist students in completing the teacher's assigned tasks. On the other hand, GPT Chat offers a variety of tasks, one of which is helping students hone their creative writing abilities. Muhammad Shidiq Proceeding of International Conference on

Education, Society and Humanity. And the application of The GPT-2 text generator is able to provide insightful writing on a variety of subjects by utilizing a text database powered by AI. The AI text generator allows users to start typing a sentence in a text field, and it will then proceed to produce a paragraph on the given topic, one word at a time. After being trained on a dataset of 8 million online pages, its language model has 1.5 billion parameters. Given every word in a text, the program forecasts the word that will come after it. Tobias Schmh, Alice Watanabe, Nadine Fröhlich, Dominikus Herzberg.

Chapter Two:

Research Methodology and Data analysis

Chapter Two: Research Methodology and Data Analysis.

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Introduction

This chapter represents the practical part of the research , the first chapter contains two section, the first described the adopted methodology that allows answering the research question ,the instrument being used , the description of students and the teachers , and the sampling that were chosen for this research study , the second one is devoted for data analysis , discussion and interpretation .

Section One: Research Methodology

1. Description of the Questionnaire

The questionnaire was distributed to third-year undergraduate students at Abbas Laghrour University in Khenchela and to writing instructors in the Faculty of Letter and Languages to determine whether they use artificial intelligence to develop their writing skills or if the instructors use AI applications to improve their students' writing skills. The student questionnaire consists of 14 questions divided into three parts, with most answers being yes or no.

2. Administration of the Questionnaire

The present research target 3 third year at the English department at khenchela university the questionnaire was distributed manually to 119 students from the 3 group, this level is selected for the reason that she /he coming to pursue a master's degree they are required to improve their writing skill because it is the most important part of writing their thesis, and this category has estimate their educational progress and express their opinion correctly, and the sample.

2.1.3 Data Analysis, Interpretation and discussion of the findings

This section details the results depicted from students questionnaire with a small description of each with illustrated by histograms and pie charts to help to show the patterns of the quantitative data clearly.

3. Analysis of the finding

3.1. Students questionnaire analysis

- **Section One** :Artificial Intelligence

1. Do you know what Artificial Intelligence is?

a. Yes

b. No

- If yes, what is it?

Options	Participants	percentages
----------------	---------------------	--------------------

Yes	118	99%
No	1	1%
Totals	119	100%

Table 1: Knowledge of AI

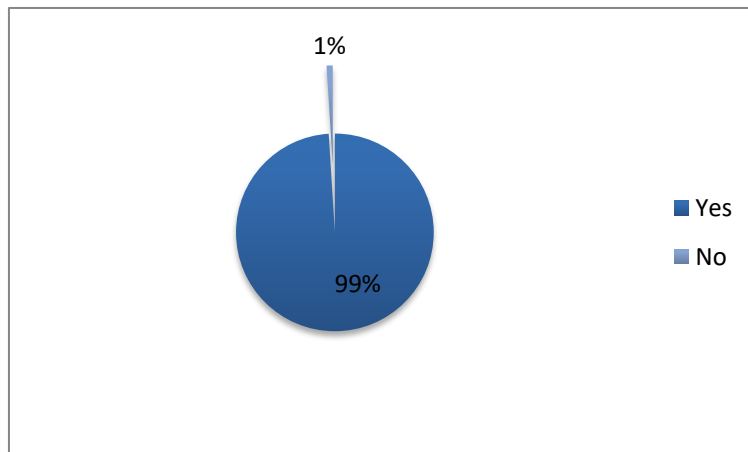


Figure 1: Knowledge of AI

In this question, it is observed that the majority of students 118 (99%), know what is it Artificial Intelligence, whereas only one student (1%) he doesn't know what is Artificial Intelligence,

- If yes, what is it?

Definitions
1/AI is the simulation of human intelligence in machines.
2/it as the development technology that helps students in different field that need.
3/AI as a computer system that can perform tasks and make decision.
4/AI is when computers and machines are designed to learn and think humans.
5/AI is like giving a brain to a robot so it can solve problems and understand things.

6/AI is technology that makes machines smart, allowing them to do think like recognize and make decisions.
7/AI is when machines can perform tasks that usually require human intelligence.
8/AI is when machines are able to perform task, learning, solving problems.
9/AI is technology that allows computers to think and learn.
10/AI is what powers smart features in apps and devices.

Table 2: Definition of AI

3. Can you name some real-world applications of Artificial Intelligence that you use it in your daily life?

Application
1. Chat GBT
2. Google bared
3. My AI
4. Grammarly
5. Siri
6. Scribd
7. Copilot

Table 3:Application of AI

2. litterateur
3. translation
4. writing academic
5. culture

Table 5:name of Subjects

In this question there are many Subjects that students prefer to lean using AI , but the most subjects that which all students agreed about her to a large extent ,is writing extent is writing academic , because many students face problems in developing their writing skills .

5. How often do you use Artificial Intelligence in your school work?

a. Never b. Always c. Sometime

Options	Participants	percentages
Never	0	0%
Always	30	25%
Sometime	89	75%
Totals	119	100%

Table 6: Students uses

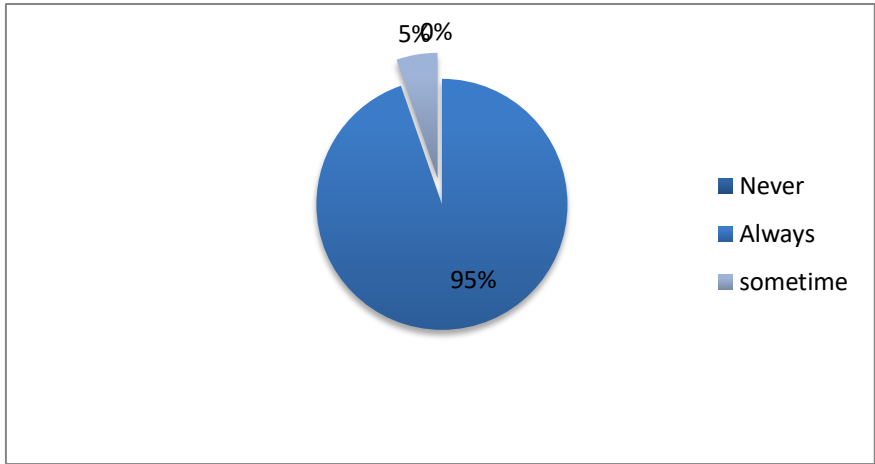


Figure 3: Student uses

In this question observed that the majority of student that he/she used AI in their school work where found 89 (75%), student that used AI sometime, and we have 30 (25%), students that that used it Always, and we have 30 (25%), students that used it always, in the rest we don't have any students that (never), used AI in their school work..

Section Two: the use of AI in students writing skill

6. Do you face problems in writing?

- a. Yes
- b. No

If yes, what are these problems? (You can tick more than one option)

- a. Time Management
- b. Writers Block
- c. Language Fluency
- d. Grammar;

Others, please specify.....

Options	Participants	percentages
Yes	89	75%

No	30	25%
Total	119	100%

Table 7: Problems

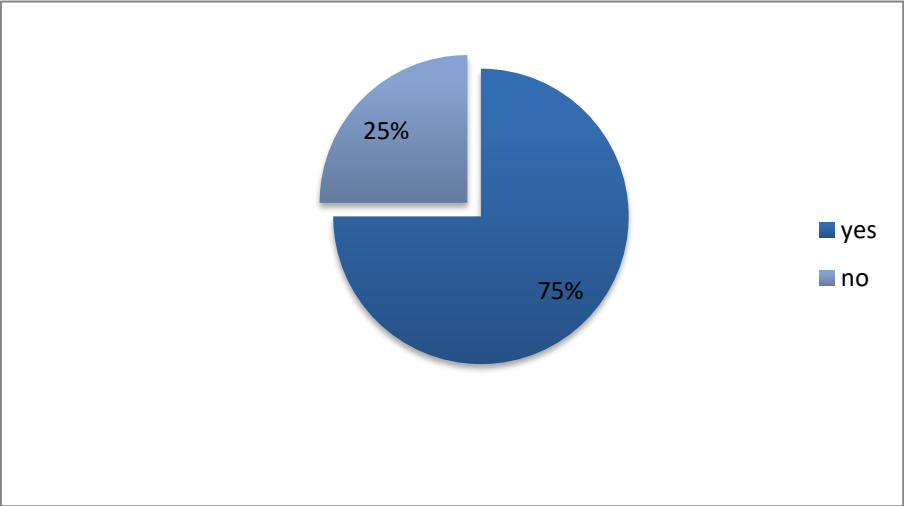


Figure 4: Problems writing

In this question it observed that the majority of students 89(75%), he/she faced problems in writing, and the rest 30(25%), he/she don't face any problems in writing.

If yes, what are these problems? (You can tick more than one option)

- a. Time Management
- b. Writers Block
- c. Language Fluency
- d. Grammar;

Others, please specify.....

Options	Participants	percentages
a	20	16%
b	50	42%

c	30	25%
d	19	17%
others	0	0
Total	119	100%

Table 8: problems in writing skills

The students that faced problem in writing the majority faced problems in writing tick the answer of writer's block. 50 (42%), and 30(25%) tick the answer of Language Fluency, and 19 (17%) tick the answer of Grammar.

7. What strategies do you adopt to overcome these difficulties?

.....

Strategies
1. Learning vocabulary
2. Practice writing
3. Reading books and articles
4. Watching videos

Table 9: Strategies

8. Do you use AI applications to improve your writing?

a. Yes

b. No

- If yes, what are these AI applications?

.....

Options	Participants	percentages
----------------	---------------------	--------------------

Yes	84	71%
No	35	29%
Total	100	100%

Table 10:Using AI to improve writing

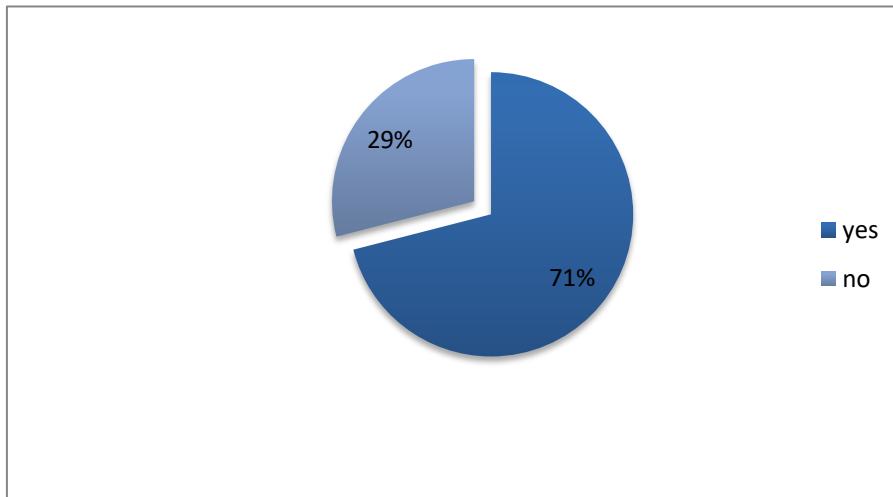


Figure 5:Using AI to improve writing

In this question it observed that the majority of students 84 (71%), use AI application to improve their writing, and the rest 35 (29%) don't use AI application.

- If yes, what are these AI applications?

Application of AI in writing
1. Grammarly
2. QuillBot
3. Reverso
4. Ginger software
5. Slick write

Table 11:Application of AI in writing

9. Does Artificial Intelligence improve lexical and grammatical accuracy in writing?

a. Yes

b. No

Options	Participants	percentages
Yes	90	76%
No	29	24%
Total	119	100%

Table 12: grammatical accuracy in writing

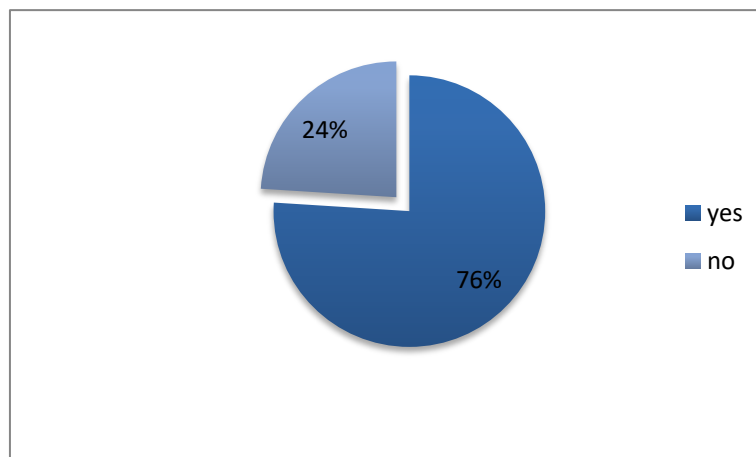


Figure 6: Grammatical accuracy in writing

In this question it observed that the majority of students 90(76%), agree that AI improve Lexical and grammatical accuracy in writing, and the rest 29 (24%) she / he don't agree that AI improve Lexical and grammatical accuracy in writing

10. How can Artificial Intelligence assist students in developing creative writing?

.....

Role of AI in developing creative writing

1. Suggestion ideas and prompts

2. Improving vocabulary and sentence structure
3. Checking grammar and style
4. Creating custom writing exercises
5. Helping outline and develop plots
6. Giving feedback on drafts
7. Simulating collaborative writing
8. Recommending learning resources
9. Adjusting voice and tone

Table 13: Role of AI in developing creative writing

10. Do you believe that using Artificial Intelligence, has improved your writing skill?

a. Yes

b. No

Options	Participants	percentages
Yes	85	71%
No	34	29%
Totals	119	100%

Table 14: AI effect on writing skill improvement

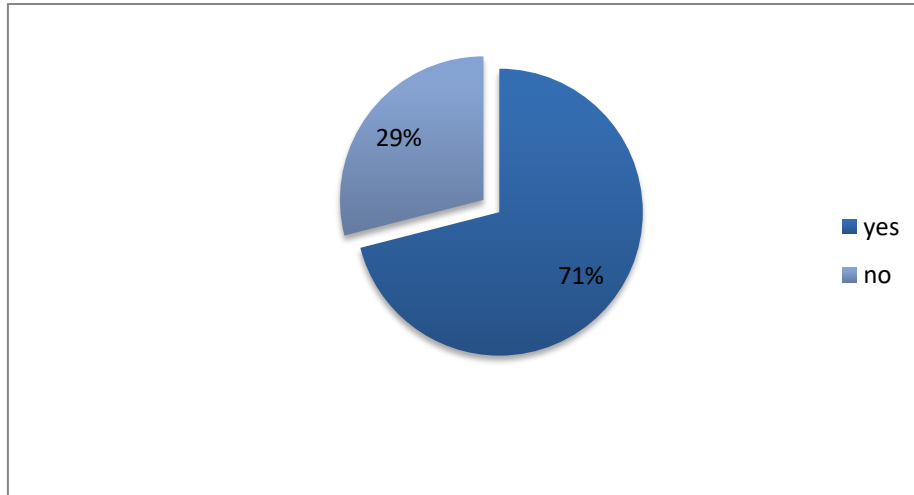


Figure 7: AI effect on writing skill improvement

In this question observed that the majority of student 85(71%),believe that using Artificial Intelligencehas improved their writing skill, and the rest 34 (29%) don't believe that using Artificial Intelligence has improved their writing skill.

Section Three:Suggestions to improve Students' Writing Skill using AI applications

11. Do you face any problem when using Artificial Intelligence applications in writing?

a. Yes

b. No

If yes, what are these problems?

.....

Options	Participants	percentages
Yes	10	8%
No	109	92%
Total	119	100%

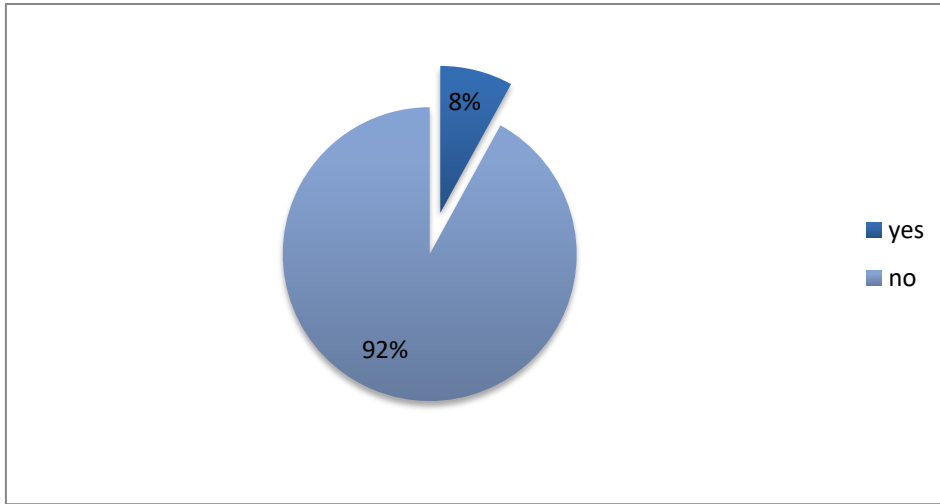


Figure 8: Problems of use AI

In this question it observed that the majority of students 109 (92%) he / she don't face any problem when using AI application in writing, and the rest 10 (8%).

If yes, what are these problems?

.....

Problems
1. Dependence on AI
2. Limited creativity
3. Errors in suggestions
4. Misunderstanding context
5. High cost
6. Privacy concerns
7. Risk of plagiarism
8. Skipping basic writing skills

Table 16: students Justification

12. Do you think that training courses on the use Artificial Intelligence would be useful to you?

a. Yes

b. No

Options	Participants	percentages
Yes	109	92%
No	10	8%
Totals	119	100%

Table 17: Training courses of AI

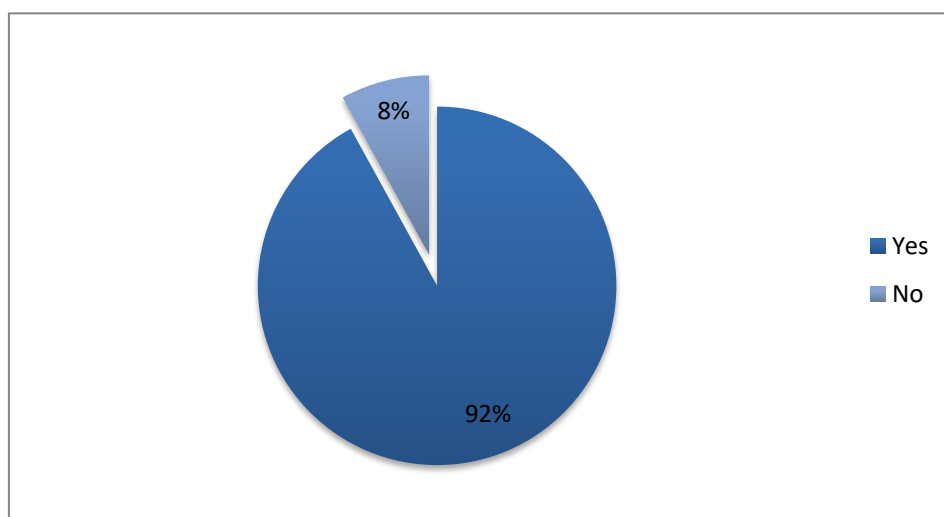


Figure 9: Training courses of AI

In this question it observed that the majority of students 109 (92%) he / she think that training courses on the use AI would be useful, and the rest 10 (8%), he / she don't think that training courses on the use AI would be useful.

13. Would your advice your classmates to use Artificial Intelligence to improve their writing skills?

a. Yes

b. No

Why?

Options	Participants	percentages
Yes	40	20%
No	79	80%
Totals	119	100%

Table 18: Advice of students

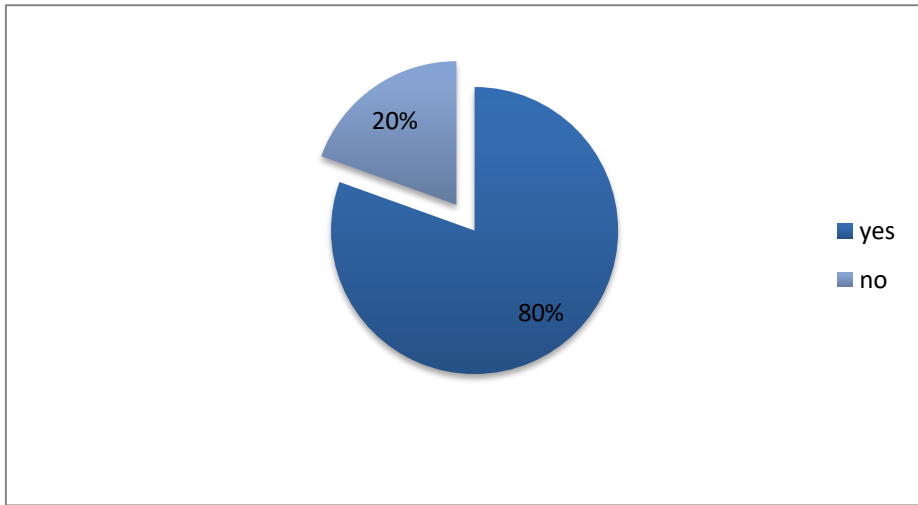


Figure 10: Advices of students

In this question it observed that the majority of students 109 (92%), advice their classmates to use AI to improve their writing skills, and the rest 10 (8%) he does not advice them classmates to use AI to improve their writing skills.

Why?

Advices
1. Because AI can help you to correct your grammar and spelling mistakes
2. AI can suggest ways to improve your writing skills
3. AI can help you simplify complex sentances
4. Write daily and use AI to correct your mistake and improve your work .

Table 19: Advice

14. Do you have any suggestions that would improve the use of AI in writing?

a. Yes

b. No

If yes, what are these suggestions?
.....

Options	Participants	percentages
Yes	119	100%
No	0	0%
Totals	119	100%

Table 20:suggestions for improving the use of AI

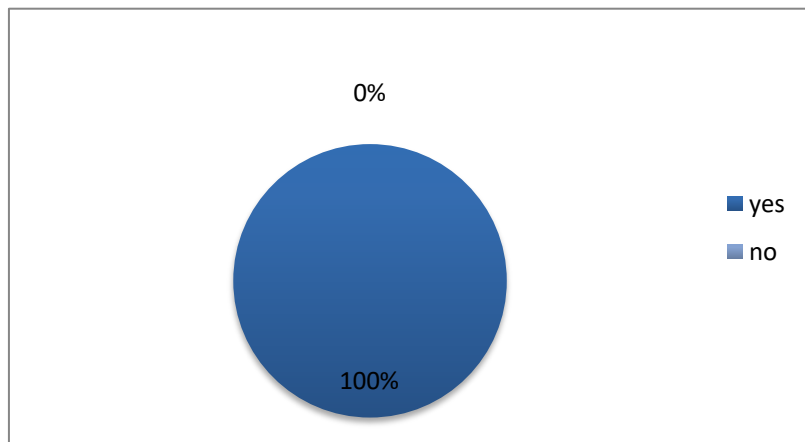


Figure 11: Proposals for enhancing AI utilization

In this question observed that all the students 119 (100%), he doesn't have any suggestions that would improve the use AI in writing.

2.2 Questionnaire of teachers

2.2.1 Description of the Questionnaire

The questionnaire was distributed to the teachers of Abbas Laghrou University Khenchela, the teacher questionnaire consists of 10 questions divided into two parts, with answers being yes or no and also including justifying sentences.

2.2.2 Administration of the Questionnaire

The present research target consisted of 20 teachers that teaching writing operation in faculty of English at Abbas Laghrou University in Khenchela.

2.2.3 Data Analysis, Interpretation and discussion of the findings

This section details the results depicted from teachers questionnaire with a small description of each with illustrated by histograms and pie charts to help to show the patterns of the quantitative data clearly.

1. Section One: Artificial Intelligence

1. Do you use Artificial Intelligence in teaching?

a. Yes

b. No

Options	Participants	percentages
Yes	9	45%
No	11	55%
Totals	20	100%

Table 21: AI use in teaching

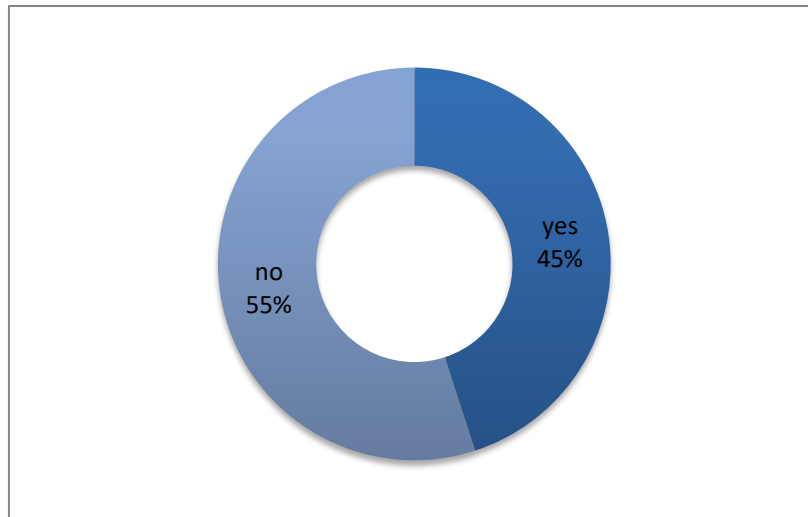


Figure 12:AI use in teaching

In this question observed that most the Teachers 11 (55%) use Artificial Intelligence in teaching, and the rest 9 (45 %) don't use Artificial Intelligence in teaching.

2. What are the main applications of Artificial Intelligence that you use in teaching?

.....

Application
1.Chat GPT
2.Siri
3.Quillbot
4.Reverso

Table 22:applications of Artificial Intelligence that you use in teaching

In this question the majority of the teachers agreed on app of Chat GPT, and siri.

3. How can Artificial Intelligence contribute to improving the teaching process in the future?

.....

How can AI improve the teaching process
1. By taking only the positive side of it and regarding the negative one since AI many contain

errors.

2.I don't think so, students and teachers will rely on AI and become lazy As guide by helping in finding answers and designing activities.

3.By analyzing a student's performance and learning style.

4. Providing lessons that match each student's level.

Table 23:How can AI improve the teaching process

4. Do you advice students to use it or not?

a. Yes

b. No

Options	Participants	percentages
Yes	15	75%
No	5	25%
Totals	20	100%

Table 24:Advice of teachers

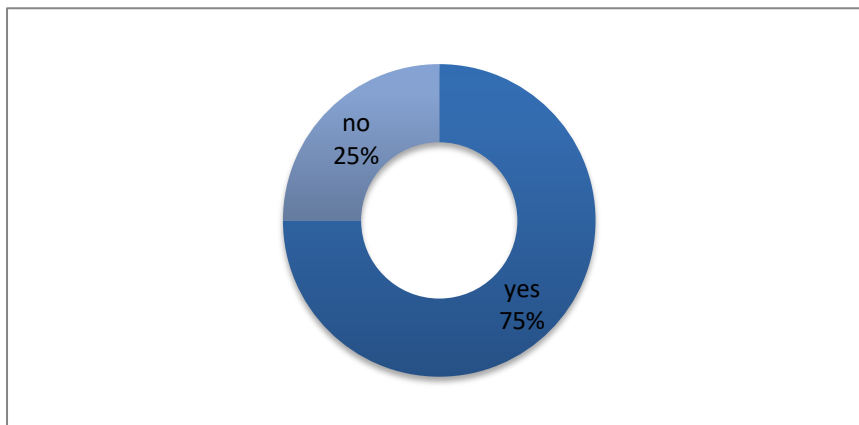


Figure 13:Advice for teachers

In this question observed that the most of teachers 15 (75%), advice students to use AI, and the rest 5 (25%) don't advice students to use AI.

5. Do you face any challenges or problems in using technology including Artificial Intelligence, in the teaching process?

a. Yes

b. No

If yes, what are these challenges?

Options	Participants	percentages
Yes	5	25%
No	15	75%
Totals	20	100%

Table 25:problems in using technology

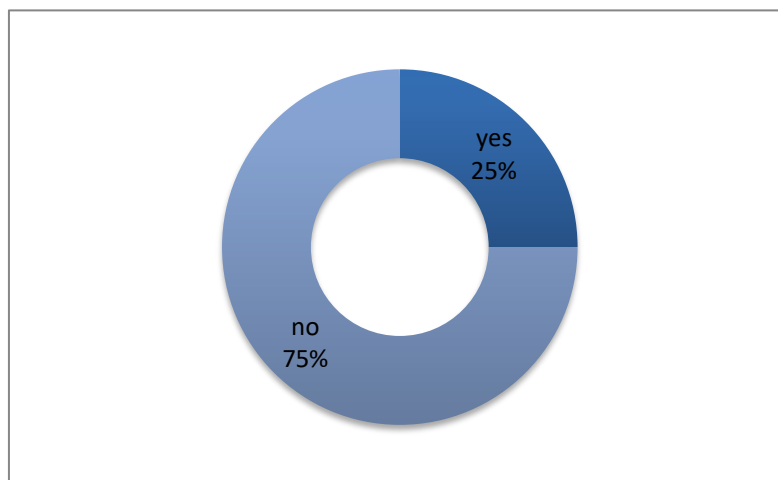


Figure 14:Problems in using technology including AI

In this question observed that the most of teachers 15 (75%) ,he don't face any challenges or problems in using technology including AI, in teaching process , and the rest 5 (25%) have many challenges and problems in using technology including AI.

If yes, what are these challenges?

challenges and problems
1. Avoid over –reliance on technology and AI tools.
2. The need to train teachers to use technologies.
3. Unethical use of Artificial Intelligence.
4. Cheating, plagiarism.

Table 26:challenges and problems of using technology

Section Two:the use of AI to improve students writing

6. Do you think that Artificial Intelligence can contribute to improving students writing skills?

a. Yes

b. No

- If yes, explain how?

.....

Options	Participants	percentages
Yes	18	90%
No	2	10%
Totals	20	100%

Table 27:the use of AI to improve students writing

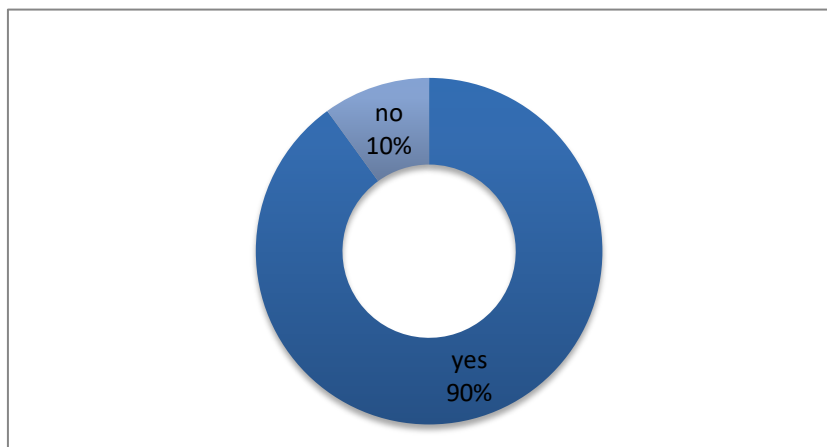


Figure 15:The use of AI to improve student writing

In this question observed that the most of teachers 18 (90%), think that Artificial Intelligence can contribute to improving students writing skills, and the rest 2 (10%). Don't think that Artificial Intelligence can contribute to improving students writing skills.

- If yes, explain how?

.....

Teachers explanation

1. It must use AI application in ethically ways.

2. Used only the application that helped it in the field of education.

3. They must use AI not to cheat but to get references.

4. Ask AI about the methodology of writing.

Table 28:Teachers explanation

7. Do you have any previous experience using Artificial Intelligence application to improve students' writing skills?

a. Yes

b. No

Options	Participants	percentages
Yes	7	35%
No	13	65%
Totals	20	100%

Table 29:experience using AI

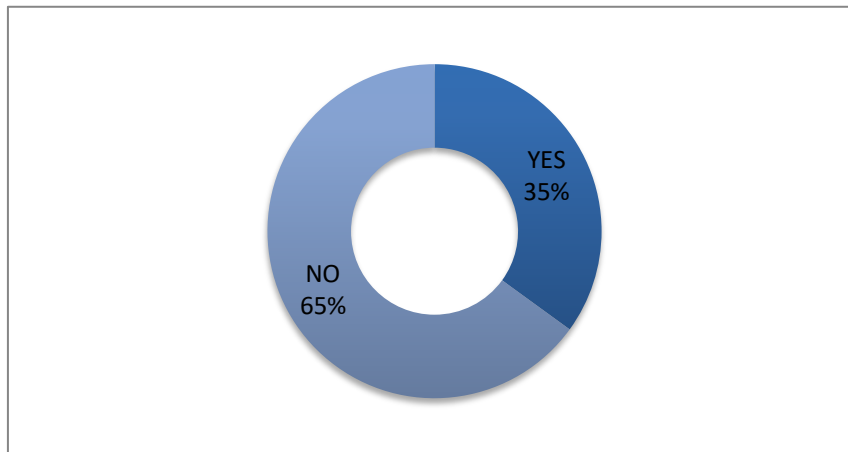


Figure 16:Experience using AI

The majority of students 13(65%), don't have any previous experience using AI application to improve students writing skills, and the rest 7(35%), have previous experience in using AI to improve the writing skills of students.

8. How positive are Artificial Intelligence tools or techniques in improving students' writing skill?

- Very effective .

- Somehow effective.

- Not effective

Options	Participants	percentages
Very effective	5	25%
Somehow effective	15	50%
Not effective	5	25%
Totals	20	100%

Table 30: positives of AI tools

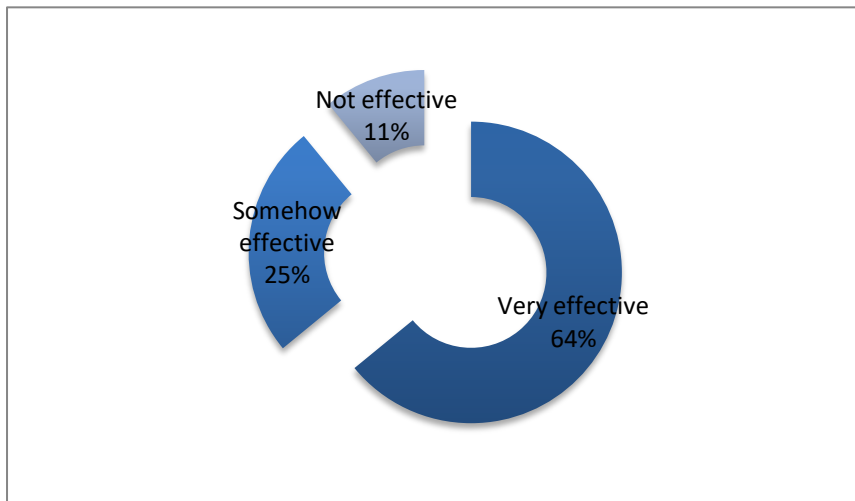


Figure 17: Positive tools or techniques in improving students writing

In this question observed that the most of teachers 15 (50%), AI tools or techniques in improving students writing skill with the answer (Somehow effective), and the 10 teachers remaining 5 (25%) answer with (Very effective). and the rest 5 (25%) answer with (Not effective).

9. What Artificial Intelligence tools or techniques, if any, you believe are the most effective ones to improve students' writing?

.....

Artificial Intelligence tools and techniques
1. Grammar and spell checkers
2. Writing Assistants
3. AI Based content Generators
4. Editing and style improvement
5. Plagiarism checkers
6. Readable enhancers
7. Personalized feedback and coaching
8. Creative writing Aids

Table 31: Artificial Intelligence tools and techniques

5. Do you have any suggestion for developing the use of Artificial Intelligence in teaching writing skill?

a. Yes

b. No

If yes, please mention them:

.....

Options	Participants	percentages
Yes	5	25%
No	15	75%
Totals	20	100%

Table 32: suggestion for developing the use of Artificial Intelligence

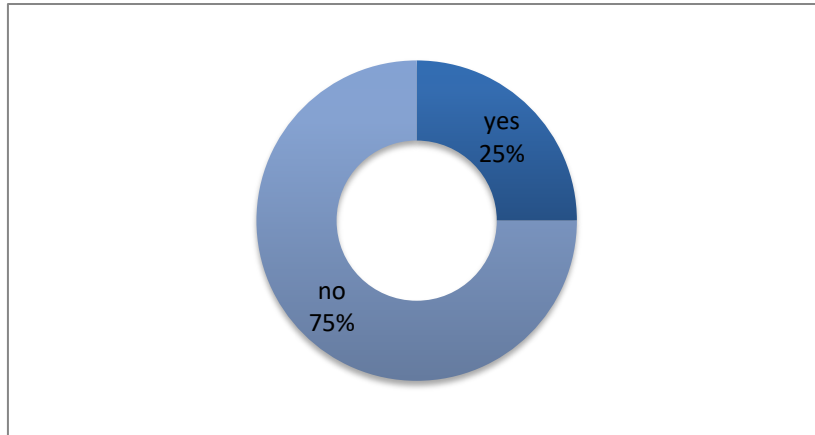


Figure 18: Suggestion for developing the use of AI

In these question the majority of teachers 15 (75%),he don't have any suggestion for developing the use of AI in teaching writing skill, and the rest 5(25%).have suggestion for developing the use AI in teaching writing .

suggestion for developing AI
1.The development of AI platforms relies providing instant feedback ,grammar ,writing style ,and text consistency
2.Detect and prevent plagiarism
3.Developing AI to develop writing topic

Table 33:suggestion for developing AI

2.3 The interpretation of the Results

Artificial intelligence plays a significant role in education by providing personalized educational tools and analyzing student data to enhance their learning experience, especially in improving their writing skills through instant feedback and correction of grammatical and spelling errors.I have designed a set of questions for teachers and students to determine whether artificial intelligence contributes to improving students' writing skills and to find out if it is suitable for teachers and if they use it to enhance their students' writing skills, and whether it can further develop and improve students' writing abilities. My goal with these questions is to understand the impact of modern technology on the educational process and to explore the effectiveness of AI tools in supporting teaching and learning. Regarding the responses of the participants in this study, the results showed that the majority of students and teachers welcome the use of artificial intelligence in education. These responses indicate a

widespread acceptance of this modern technology and an awareness of its benefits in enhancing the quality of education and developing students' writing skills. Many students struggle with writing, facing challenges such as spelling errors, grammar issues, syntax problems, and lack of coherence. To address these challenges, they turn to artificial intelligence, which aids in enhancing their writing skills through regular use of AI-powered applications. With graduation on the horizon, mastering this skill is imperative as it is considered foundational to education. Our study findings reveal that the majority of students rely on AI to refine their writing abilities.

According to student responses, 71% of students use artificial intelligence applications to develop their writing skills because it significantly contributes to assisting students in this area. There are many available applications that support this field and provide effective tools to enhance students' writing skills. Moreover, 92% of students believe that regular use of these applications helps them enhance their writing skills. This indicates that through consistent practice, any student can improve their writing independently without relying on them. In short, artificial intelligence is considered a vital partner in enhancing students' writing skills, providing efficient tools for precise feedback and direct guidance. Thanks to data analysis and machine learning, AI enables personalized learning opportunities, contributing significantly to improving writing quality and fostering students' development in this field.

2.4 General Conclusion

In conclusion, artificial intelligence plays a vital role in enhancing students' writing skills. Through the use of AI tools and techniques, students can receive immediate and personalized feedback on their writings, helping them identify strengths and weaknesses in their literary works. These tools enable students to improve their grammar, style, and overall text organization. Furthermore, artificial intelligence provides a variety of educational resources, such as good writing samples and specialized guidance, contributing to the development of creative and critical writing skills. Thanks to these technologies, interactive and personalized learning can be enhanced, leading to improved academic outcomes and increased confidence in students' writing abilities.

It is also important to note that the use of artificial intelligence in improving writing skills should complement traditional educational efforts and should not replace human interaction and direct guidance from teachers. In this way, the ideal balance between technology and tra-

ditional education can be achieved to ensure comprehensive and sustainable development of students' writing skills. In this research, we attempted to understand how artificial intelligence can enhance students' writing skills, as well as identify the problems and challenges they face during the writing process. Solutions provided by artificial intelligence to overcome these difficulties and assist students in developing their skills were also discussed. Additionally, some leading applications utilized by students to benefit from artificial intelligence technologies in improving their writing performance were reviewed. Navigating through the educational journey presents various obstacles for students.

However, with the integration of innovative solutions like artificial intelligence, these challenges can be addressed more effectively, empowering students to overcome barriers and achieve academic success. As technology continues to evolve, it holds the promise of revolutionizing education and providing tailored support to students, ensuring equitable opportunities for learning and growth. Education is a journey filled with challenges and difficulties, but we must always remember that these challenges are opportunities for growth and development. When we encounter difficulties in our studies or understanding concepts, we must challenge ourselves to overcome these obstacles. By persevering and working hard, we can achieve our educational goals and overcome the obstacles we face. So, let's challenge ourselves to be stronger and more resilient, and let's continue our educational journey with confidence and determination, this thesis is divided into two chapters, chapter one is about Literature Review, and is divided into two sections,

Section one is about Theoretical part of Artificial Intelligence and Writing, In it, we covered several definitions related to writing and artificial intelligence separately, as well as the types and categories of each, and their relationship to each other. Also, in section two is about Discuss of the Topic how can AI improve the writing skills of students, we covered How can AI improve the writing skills of students and Artificial Intelligence Techniques in enhancing students writing creativity also The Impact of Artificial Intelligence on writing skills. The second chapter of the research is about investigation of our study in which, the tools have been selected in order to gather the data needed to reach our research goals. It included a Description of both questionnaire of teachers and students involved in this study. Moreover, it presented the analysis of the figures taken from the questionnaire that has been carried out by third Year LMD English students at the Department of English Language, University of Khenchela. This chapter consists of two main points, the first one is that we concentrated only on the Analysis of the students' answers to state their using of AI to improve their writing skills. The sec-

ond part contains the teachers' response that use AI in teaching or not , and use the it to help the student to improve their writing skill .

2.5 Recommendations

Writing skills among students face several challenges. Many students struggle with a lack of motivation and interest in writing and find it difficult to express their ideas clearly and coherently. Some have trouble organizing their thoughts and constructing sentences in a logical and engaging manner, which affects the overall quality of their work. Additionally, students face challenges in meeting the demands of academic and professional writing, such as research papers, reports, and essays. However, artificial intelligence can contribute to improving students' writing skills in several ways.

- Provide instant feedback and guidance to students on sentence structure
- Vocabulary usage, and idea organization
- Offer writing templates and models
- Making it easier for students to start and guide them step-by-step through the writing process
- Analyses of students' writing performance
- Enabling teachers and trainers to better guide students and offer the necessary support in areas where they need to develop.
- AI helps students improve their writing by providing instant corrections for errors.
- AI helps students improve their writing by suggesting improvements in grammar and style.
- AI helps students improve their writing by offering personalized feedback.
- AI helps students improve their writing by enhancing vocabulary and synonyms.
- AI helps students improve their writing by providing examples of excellent writing.
- AI helps students improve their writing by analyzing texts to identify strengths and weaknesses

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APPENDIX 1

THE STUDENTS' QUESTIONNAIRE

Dear students,

You are kindly invited to answer the present questionnaire which is part of a research entitled "Investigating the Use of Artificial Intelligence to Improve Students' Writing Skill". Please tick () the choice that corresponds to your answer and give full answer where necessary.

All answers are anonymous and data is kept confidential and used only for research purposes.

Thank you for advance.

Section one: Artificial Intelligence

1. What is your gender?

a. Male

b. Female

2. Do you know what Artificial Intelligence is?

a. Yes

b. No

- If yes, what is it?

.....

3. Can you name some real-world applications of Artificial Intelligence that you use it in your daily life?

.....

4. Do you prefer relying on Artificial Intelligence to learn some subjects?

a. Yes

b. No

- If yes, what are these subjects?

a. Yes

b. No

Section Three: Suggestions to improve Students' Writing Skill using AI applications

11. Do you face any problem when using Artificial Intelligence applications in writing?

a. Yes

b. No

If yes, what are these problems?

.....

12. Do you think that training courses on the use Artificial Intelligence would be useful to you?

a. Yes

b. No

13. Would your advice your classmates to use Artificial Intelligence to improve their writing skills?

a. Yes

b. No

Why?

.....

14. Do you have any suggestions that would improve the use of AI in writing?

a. Yes

b. No

If yes, what are these suggestions?

.....

APPENDIX 2

THE TEACHERS QUESTIONNAIRE

Dear teachers,

You are kindly invited to answer the present questionnaire which is part of a research entitled “Investigating the Use of Artificial Intelligence to Improve Students’ Writing Skill”. Please tick () the choice that corresponds to your answer and give full answer where necessary.

All answers are anonymous and data is kept confidential and used only for research purposes.

Thank you for advance.

Section one: Artificial Intelligence

1. Do you use Artificial Intelligence in teaching?

a. Yes

b. No

2. What are the main applications of Artificial Intelligence that you use in teaching?

.....

3. How can Artificial Intelligence contribute to improving the teaching process in the future?

.....

4. Do you advice students to use it or not?

a. Yes

b. No

5. Do you face any challenges or problems in using technology including Artificial Intelligence, in the teaching process?

a. Yes

b. No

If yes, what are these challenges?

.....

Section two: The Use of Artificial Intelligence to Improve Students’ Writing

1. Do you think that Artificial Intelligence can contribute to improving students writing skills?

a. Yes

b. No

- If yes, explain how?

.....

2. Do you have any previous experience using Artificial Intelligence application to improve students' writing skills?

a. Yes

b. No

4. How positive are Artificial Intelligence tools or techniques in improving students' writing skill?

- Very effective .

- Somehow effective.

- Not effective

3. What Artificial Intelligence tools or techniques, if any, you believe are the most effective ones to improve students' writing?

.....

5. Do you have any suggestion for developing the use of Artificial Intelligence in teaching writing skill?

a. Yes

b. No

If yes, please mention them:

.....

