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The role of AI-based Mobile Applications in English Language Learning

A Case study of Second Year Master students at AbdelHamid Ibn Badis University in Mostaganem

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Dedication

I am dedicating this thesis to one beloved person who has meant and continue to mean so much to me. Although he is no longer of this world, his memories continue to regulate my life my father.

First and foremost, to my Mother whose love for me knew no bounds and, who taught me the value of hard work. Thank you so much. Next, my Sisters who loved me.

I love you all !

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Abstract

Artificial intelligence (AI) is revolutionizing the way we learn, and mobile applications that leverage this technology are making language learning easier and more accessible than ever before. AI mobile applications offer personalized learning experiences that cater to individual needs, making language learning more efficient and effective. In particular, AI-based mobile applications used for learning English as a second language are gaining widespread popularity due to the widespread use of the language in global business, education, and social interactions. The benefits of AI in language learning are numerous. It can provide personalized feedback, create interactive and engaging experiences, offer real-time conversational practice, and even simulate real-life scenarios. With these features, AI mobile applications can help users improve their grammar, vocabulary, pronunciation, and comprehension skills. AI mobile applications are designed to adapt to the user's unique learning styles, and as a result, they offer a tailored experience that meets the needs of the individual. Whether someone struggles with grammar or wants to improve their speaking skills, AI-powered language learning apps can provide targeted feedback and help users identify areas for improvement. The use of AI in language learning is revolutionizing the way we learn and making it easier and more accessible for anyone to acquire a new language. With the continued development and advancements in AI technology, language learning will continue to become more efficient, personalized, and effective.

Key words: Artificial Intelligence-based Mobile Applications, English Language learning.

List of graphs

List of acronyms

AI: Artificial Intelligence;

DGBLLT: Digital-Based Language Learning and Teaching;

CALL: Computer Assisted Language Learning.

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General

Introduction

General Introduction

Artificial Intelligence (AI) is a human intelligence simulation based on computers and designed to function as human beings. AI is one of the drivers of the 4.0 industrial revolution to facilitate education in teaching and learning. AI is a broad field of computer science that concerns the building of smart machines capable of performing tasks that typically require human intelligence. AI in Education has gradually emerged and been established as a promising branch of research in educational technology.

Teaching and learning English also has become easier with the development of technology and digital platforms. These now offer the opportunity to improve English language skills. Therefore, learning English has always been substantially difficult for ESL/EFL (English as Second/Foreign Language) students (Mehrotra, 2019). Thus, the reform of English teaching and learning can be effectively promoted through artificial intelligence machine learning, intelligent search, and natural language processing (Wang, 2019).

Related to the explanation above, this research is to know the role of Artificial Intelligence (AI) and to investigate AI technologies in English Language Learning. Two research questions were raised to be investigated in this work:

1. What role Artificial Intelligence-based mobile applications are playing in the field of Education?

2. To what extent are they efficient to improve English language learning?

To answer these questions, the following hypotheses are suggested:

1. Learners prefer using AI- based mobile applications to improve their level in English;

2. AI- based mobile applications help learners in improving their language proficiency;

3. The Applications' learners use are effective while learning English.

The aim of this study is to investigate the effectiveness of AI-based mobile applications in enhancing English language proficiency and what purpose are used for (reading, writing, listening, speaking, translation)

In conducting research, the researcher needs to use different tools to collect data from the chosen participants. One of these tools is the use of the questionnaire. A questionnaire

which is series of questions used in order to collect data and information from the sample being selected

For this research, a qualitative and quantitative study or a mixed method study natures was conducted in which a questionnaire was given a sample of second-year Master's students at the English department at AbdelHamid Ibn Badis University. An interview was used to investigate teachers' opinion about this kind of mobile applications.

The work is divided into three chapters. The first chapter starts with an overview of Artificial Intelligence, its history, its implementation in the field of education and a set of AI-based Mobile Applications that are used all over the world to learn English.

The second chapter spots the light on the methodology used in investigating the role of artificial intelligence applications in learning English and its efficiency. First, it tackles the procedure of this research, the context, the participants and the different methods used in collecting data.

The third chapter discusses the findings of the questionnaire, which demonstrates the role of the artificial intelligence applications in learning English and its efficiency in language learning.

Chapter I

Literature Review

I. Artificial Intelligence in Language Learning

I.1. Introduction

The Artificial Intelligence (AI) boom is happening all over the world, and it is accelerating quickly. It is completely obvious these days that AI has found its way into every aspect of our daily lives. Much of what used to be science fiction has become reality, and it is strongly agreed that AI has an important role in helping both teachers and learners to teach and to learn languages more effectively.

The purpose of this chapter is to examine relevant literature regarding the role of AI-based mobile applications in learning English as a foreign language.

I.2. definition of Artificial Intelligence

Artificial Intelligence (AI) is about adding human intelligence to the machine for task execution. According to Mehrotra (2019), Artificial Intelligence (AI) is a computer science technology that explores the analysis and development of smart machines and apps. It is the science of having a machine to think and behave like a human being who is intelligent. The key to AI technology lies in intelligence (Wang, 2019). According to Whitby (2009), AI studies intelligent behaviors in humans, animals, and machines and attempt to find ways.

The word AI consists of the words "artificial" and "intelligence" (Ahmet, 2018). The word "artificial" is something that is not real, simulated, but not completely false regarding being a fraud. While "intelligence" is something that can replace genuine items because the former has better qualities in a certain context. Intelligence is a very complex term. It includes different forms, such as reasoning, self-knowledge understanding, emotional awareness, preparation, consciousness, and creativity. As stated by Joshi (2019, p. 4), AI may not mean designing an incredibly smart computer that solves all problems, but rather building a machine that is capable of human-like action. The purpose of artificial intelligence is to build computer software or hardware systems that demonstrate human-like thought or display features traditionally associated with human intelligence (Campesato, 2020).

AI as a computer system theory can perform tasks normally involving human intelligence. Speech understanding, language awareness, decision making, and visual perception are aspects of human intelligence that can be understood by artificial intelligence.

There is a demand for AI to create an expert system and to find solutions for complex problems such as recognition or natural language processing (Devi et al., 2020).

AI offers tireless, individualized training, providing learners the large volume of feedback and scaffolding activities needed to achieve fluency, all within a low-stakes atmosphere, (learners are more likely to take chances and make mistakes). AI's big promise is that it will shorten the time it takes to develop abilities.

Kaur & Gill (2019) states that artificial intelligence (AI) is a digital attempt to achieve human-level intelligence by using different computations of machines. It is a series of advanced technologies that allow humans to feel, comprehend, function, and learn from machines.

It can be said that Artificial intelligence (AI) is a branch of computer science that emphasizes the ability to think and act like humans. It is helped by machines to find solutions to complex problems in a more human-like fashion (Sridhar, 2018). This requires borrowing human intelligence traits and then incorporating them in a computer-friendly way. Human actions such as learning, planning, making decisions, and knowing language can be done by Artificial Intelligence (AI).

Artificial intelligence (AI), generally expressed by the general public as the ability of machines or computers to think and act as humans do, represents the efforts towards computerized systems to imitate the human mind and actions (Wartman & Combs, 2018). In this respect, the basic definition of artificial intelligence can be expressed as the skilful imitation of human behaviour or mind by tools or programs (Mohammed & Watson, 2019).

I.3. A brief History of Artificial Intelligence

When speaking about the history of artificial intelligence some people believe it began in ancient times because AI, or a form of it, appeared in mythology. In Greek mythology, it appeared in the story about Hephaestus. Hephaestus was the Greek god of technology. In the story of Hephaestus, he had many projects that appeared to think and feel as if they were alive, but they were merely metal creations. Talos, one of Hephaestus's creations, was a giant bronze warrior programmed to protect the isle created by Hephaestus. He was like a cybernetic organism that combined neural network computing with living and nonliving components. Hephaestus had many creations besides Talos, but they all seemed to think and feel as if they were alive. The only way someone could tell they were not alive would be the

fact they were made from metal. This concept of artificial intelligence was known well before it was created, but they did not have the technology to produce it.

In the 17th century Descartes, a French philosopher, proposed that the bodies of animals were the same as complex organic machines. This is important because in Descartes idea it suggested artificial intelligence was possible if people could already create complex machines.

Another important discovery happened in the 17th century, which established the creation of the first mechanical calculator. Blaise Pascal, a French mathematician and inventor, solved the issues with Wilhelm Schickard's failed attempt at the mechanical calculator.

In the 19th century Charles Babbage and Ada Byron, also known by her married name of Ada Lovelace, designed a programmable mechanical calculating machine. This analytical engine was proposed but was not competed by Babbage and Lovelace due to inadequate funding.

Another important discovery in the 19th century would be the creation of Boolean algebra by George Boole. He created a modern symbolic logic which led to the creation of digital computer circuits.

In the early 20th century a Spanish civil engineer and mathematician named Leonardo Torres y Quevedo wanted to prove thought could be simulated by machines. He created a technology known as El Ajedrecista, (which is Spanish for Chess player), in 1912. Quevedo's device was an autonomous machine he used to prove that mathematics could replicate what people perceived as thought by having it play chess. It was mentioned in these myths and in stories since then, but the birth of artificial intelligence began around 1950.

In 1956, a group of scientists from different disciplines conversed about the construction of an artificial mind. In 1956 John mccarthy introduced the term Artificial Intelligence at the Dartmouth College AI conference. Mccarthy was a math professor that introduced this term because he thought every aspect of learning and intelligence could be precisely calculated where a machine could simulate it. The Dartmouth conference of 1956 was when artificial intelligence emerged as a formal academic discipline.

Five years later Alan Turing wrote a paper on the notion of machines being able to simulate human beings and the ability to do intelligent things, such as play Chess. No one

can refute a computer's ability to process logic. But to many, it is unknown if a machine can think.

Alan Turing was a mathematician that published "Computing Machinery and Intelligence" in 1950. He thought of this hypothetical machine in 1936. This was the beginning of artificial intelligence because he introduced something known as the Turing machine. A Turing machine accepts variables and has a response based on what values were entered.

I.4. The use of artificial intelligence in today's educational world

A number of researches and strategies have been conducted and devised to effectively apply artificial intelligence (AI) applications to teach/learn languages. The core points that have been covered are AI strategies and its suitable applications for teaching/learning languages, the effectiveness of these applications, their practical use, and the requirements for using them in the fields of teaching/learning languages.

Teaching English as a second language requires training in and practicing language skills. Since the opportunity to practice these skills in real life situations are often not available, students' chances of mastering these skills are diminished. Therefore, it is necessary to switch from traditional strategies to communicative ones, and rely on digital tools to face difficulties in teaching/learning English. Furthermore, teaching English as a foreign language is regarded as an essential in modern life. The main aim of teaching English is to develop communicative competence, which is achieved through knowing how to use language elements and vocabulary to develop the skills of listening, speaking, reading, and writing. It also includes how to use language to produce texts, and how to use it to understand reading passages.

The process of language development is based on communication as a goal and as a process. Thus, it is necessary to use AI applications such as simulation and communication programs as these simulate real life situations for conversation and communication in English, introduce practical training in language skills, and educational games based on language. Communication tools based on AI help design situations for practicing the accurate pronunciation of letters and words through sound drills and visual media. Such tools provide exercises for describing and interpreting images and everyday situations, for listening, and for practicing guided pronunciation. They also allow learners to practice language skills and provide feedback for guidance. Some programs have language drills that

give training in communication through using language skills to guarantee that learners reach proficiency levels.

AI is used to recognize natural human speech. The use of AI is able to assist researchers in developing natural language systems in that it helps to program more precise speech recognizing system. In other words, instead of using AI for human to talk to a computer, human now can talk through a computer. Previously, it was human-to-human communication when Computer-Mediated Communication is employed to communicate between one individual to another individual. Yet, with the use of AI, humans are able to talk to machine akin to when they talk to a human.

Moreover, such new technologies have been applied in the Digital Game Based Language Learning and Teaching (DGBLLT). Digital games are considered as primary components within the field of Computer Assisted Language Learning (CALL) (Cornille et al., 2012; Reinhardt et. al, 2014), just like the traditional games are regarded as part of Second Language Acquisition (SLA) (Wright et al., 1984; Ersoz, 2000). CALL software packages have so far provided small digital games such as hangman, puzzle and sentence production device to teach vocabulary and grammar in addition to various materials and activities to develop language skills. Furthermore, web and mobile versions of these kinds of stand-alone games are developed and some of them are integrated into foreign language learning process.

I.5. Artificial Intelligence in Education

Manyika et al. (2017) emphasize that good teachers will continue to exist in the future, teaching classes designed to boost students' affective intelligence, creativity, and communication. In fact, according to these authors, developments in artificial intelligence and automation will actually make 'people more human.' While addressing educational research on artificial intelligence, Haseski (2019) briefly states the results of these studies as follows: the use of artificial intelligence in education will make learning more individual, provide effective learning experiences, enable students to discover their talents, improve their creativity and reduce teachers' workload. That being said, there are opposite ideas as well. Transferring the roles of teachers to computers is seen as a danger in the studies on artificial intelligence (Humble & Mozelius, 2019).

With more usage of artificial intelligence in education, major transformations can be foreseen in the education systems and its processes. Based on the study results, Sekeroglu, Dimililer and Tuncal (2019) stated that artificial intelligence could help teachers improve

personalized education for their students. Artificial intelligence can provide access to appropriate and better learning opportunities for excluded people and communities, people with disabilities, refugees, people out of school, and those living in isolated communities (Pedro, Subosa, Rivas, & Valverde, 2019). Research shows how effective individually tailored approaches can be presented with the support of artificial intelligence techniques and intelligent learning environments (Mohammed & Watson, 2019). Although quality education seems to require the active participation of human teachers, artificial intelligence envisages increasing education and quality at all levels, especially by providing personalization (Grosz & Stone, 2018).

Pedro et al (2019) highlight a dual-teacher model with artificial intelligence in terms of individualized education: teachers spend a lot of time in routine and other administrative tasks, such as repeating frequently, answering questions about many topics, but in-class artificial intelligence-supported assistants (secondary teachers) will reduce the time spent on routine procedures, which will help teachers focus on student guidance and one-to-one communication.

I.6. The application of AI in English language teaching

In the new era, artificial intelligence technology has made an important breakthrough in the field of education and teaching. At present, the accuracy of artificial intelligence speech recognition technology, which is in the leading position in the world, has reached a very high level. This speech recognition technology is widely used in all aspects. In addition, language translation, speech synthesis, speech testing, speech conversion, voiceprint recognition and other artificial intelligence technologies are also closely related to language learning. In modern society, machines can not only understand people's words, but also give full feedback to people's words. Artificial intelligence has brought new ideas and breakthroughs to human learning methods, but also challenges and opportunities to all aspects of teaching.

I.7. The Development of AI Technology in Language Learning

The development of AI technology in language learning is mainly reflected in speech recognition technology, language understanding technology, language translation machine, etc. In particular, the development of artificial intelligence speech recognition technology has led the world, the accuracy of speech recognition is over 97%, and the

recognition speed is very fast. The application and development of artificial intelligence speech recognition technology make the machine have knowledge. The ability of other people's similar language, and can give quick feedback. With the development and upgrading of AI, the translation level of AI has changed from simple literal matching develops to deep level semantic understanding, which realizes human like thinking intelligent translation.

I.7.1. The Application of Artificial Intelligence Technology in English Listening

In the field of language learning, artificial intelligence can play its unique advantages. It plays an important auxiliary role in students' learning and teachers' teaching. The application of artificial intelligence technology in English teaching can give full play to its advantages and make up for the shortcomings of traditional classroom teaching.

Teaching is the beginning of learning a language and occupies a basic position in English teaching. As an indispensable part of students' English learning process, listening training is of great significance to the cultivation of students' Basic English literacy.

However, due to many reasons such as the boring content of listening materials, the difficulty of listening and the inflexibility of teaching methods, students have some fear and resistance to English listening courses. Corpus based English listening teaching can provide learners with a large amount of listening materials. Different difficulties and themes can meet the real needs of many students for English listening. The application of artificial intelligence technology to English Listening Teaching Based on corpus can help students to match learning resources automatically.

Artificial intelligence technology can automatically match the listening materials suitable for the students from the corpus, improve the students' interest in learning, and reduce the burden of English listening by analysing the factors such as students' age, English level and major. Second, students can choose the corresponding English learning materials according to their own interests and their own plans for the future career to conduct in-depth and comprehensive learning. Third, it can realize the interaction between learning and situation. For example, when students scan an object around them, artificial intelligence can automatically recognize and explain the object in English, which realizes the close connection between listening practice and life.

I.7.2. Application of artificial intelligence technology in English Writing

The application of artificial intelligence technology in English writing teaching is mainly reflected in the correction of English composition content .Firstly, the teacher arranges the writing task in the composition system. The students can write in the composition system after receiving the homework.

The artificial intelligence system can provide students with an idea and framework for learning and doing, provide corresponding vocabulary reference in the specific writing, and assist students to complete the task. After the completion of the system for review, students can know their level of learning and doing at the first time, and correct the problems in writing. Through, this process can help students find out and fill in the gaps in time, and strengthen their writing ability. Such as correction network. This kind of intelligent teaching platform can give timely and effective feedback to students' uploaded English compositions, and make objective evaluation on students' English compositions.

The system can make a comprehensive analysis of the students' English composition, make a basic judgment on the structure of the students' articles, correct the spelling errors and many grammatical errors in the articles in time, and put forward the modification suggestions in time, Introduce an automatic online correction service tool into English writing teaching, give full play to its advantages of personalization, instant feedback, comment on sentences, online modification, let students have fun in writing in the process of multi manuscript modification, realize self-exploration and self-innovation construction, enhance their sense of self-efficacy in writing ability, and improve their motivation and writing ability. Teachers can use the system's automatic feedback mechanism to make manual secondary correction and make further teaching feedback. Teachers can also master students' learning situation and implement curriculum improvement at any time according to the formative assessment report given by the system, which is of great significance for improving teaching methods and realizing the upgrading of teaching system.

I.7.3. Application of artificial intelligence technology in English translation

Teaching Artificial intelligence technology realizes the accuracy and real-time of translation, which is a huge test for students' translation ability. Using cloud platform to realize the translation teaching of artificial intelligence, the first embodiment is the translation process.

The introduction of artificial intelligence into translation teaching can create translation situations for students, provide guidance, and help for students' translation. In this process, students can solve a large part of the difficulties and doubts of translation through artificial intelligence, which to a certain extent will stimulate students to explore the fun of deep learning and enhance their enthusiasm for translation.

The second is translation evaluation. Create translation tasks on the cloud platform. The artificial intelligence system can track each translation of students to form a dynamic evaluation. Teachers can supervise the whole translation process, timely and accurately understand each student's translation characteristics, quantify the translation results of students, and realize personalized guidance of students. AI also has a breakthrough in the field of English translation

I.8. The relationship between Language learning theories and AI-based mobile applications

There are several language learning theories that can be applied to the use of artificial intelligence-based mobile applications for language learning. Here are a few:

I.8.1. The Behaviorist Theory

The behaviorist movement began in 1913 when John Watson wrote an article entitled 'Psychology as the behaviorist views it,' which set out a number of underlying assumptions regarding methodology and behavioral analysis. J.B. Watson and B.F. Skinner rejected introspective methods as being subjective and unquantifiable. These psychologists wanted to focus on observable, quantifiable events and behaviors. They said that science should take into account only observable indicators. They helped bring psychology into higher relevance by showing that it could be accurately measured and understood, and it wasn't just based off opinions. Watson and Skinner believed that if they were given a group of infants, the way they were raised and the environment they put them in would be the ultimate determining factor for how they acted, not their parents or their genetics.

In the classroom, the behavioral learning theory is key in understanding how to motivate and help students. Information is transferred from teachers to learners from a response to the right stimulus. Students are a passive participant in behavioral learning-teachers are giving them the information as an element of stimulus response. Teachers use behaviorism to show students how they should react and respond to certain stimuli. This needs to be done in a repetitive way, to regularly remind students what behavior a teacher is

looking for. Skinner emphasizes the importance of behaviorism specifically its procedures in a classroom setting.

One might briefly describe a procedure of a behavior modification as follows:

- specify the desired outcome that needs to be changed and how it will be evaluated

- establish a favorable environment by removing unfavorable stimuli that might complicate learning ;

- choose the proper reinforcers for desired behavioral manifestations;

- begin shaping desired behavior by using immediate reinforcers for desired behavior;

- once a pattern of desired behavior has begun, slacken of the number of times reinforcers are given;

- evaluate results and reassess for future development.

This theory suggests that language learning is based on the repetition of correct responses to stimuli. In the context of AI-based mobile applications for language learning, this theory could be applied by providing learners with immediate feedback on their responses, guiding them to produce correct responses through repetition and reinforcement.

I.8.2. The Cognitive Theory

In the late 1950's, learning theory began to make a shift away from the use of behavioral models to an approach that relied on learning theories and models from the cognitive sciences. Psychologists and educators began to de-emphasize a concern with overt, observable behavior and stressed instead more complex cognitive processes such as thinking, problem solving, language, concept formation and information processing (Snelbecker, 1983).

Constructivism is a theory that equates learning with creating meaning from experience (Bednar et al., 1991). Cognitive theories stress the acquisition of knowledge and internal mental structures and, as such, are closer to the rationalist end of the epistemology continuum (Bower & Hilgard, 1981). Learning is equated with discrete changes between states of knowledge rather than with changes in the probability of response.

Cognitive theories focus on the conceptualization of students' learning processes and address the issues of how information is received, organized, stored, and retrieved by the mind. Learning is concerned not so much with what learners do but with what they know and how they come to acquire it (Jonassen, 1991b). Knowledge acquisition is described as a

mental activity that entails internal coding and structuring by the learner. The learner is viewed as a very active participant in the learning process.

This theory suggests that language learning occurs through the development of mental processes, such as memory and attention. AI-based mobile applications could use this theory by presenting learners with challenging language tasks that require the use of cognitive processes such as problem-solving, critical thinking, and decision-making.

I.8.3. The Constructivist Theory

Constructivism is 'an approach to learning that holds that people actively construct or make their own knowledge and that reality is determined by the experiences of the learner' (Elliott et al., 2000, p. 256). Arends (1998) states that constructivism believes in personal construction of meaning by the learner through experience, and that meaning is influenced by the interaction of prior knowledge and new events.

Constructivism's central idea is that human learning is constructed, that learners build new knowledge upon the foundation of previous learning. This prior knowledge influences what new or modified knowledge an individual will construct from new learning experiences (Phillips, 1995).

The constructivist theory posits that knowledge can only exist within the human mind, and that it does not have to match any real-world reality (Driscoll, 2000). Learners will be constantly trying to develop their own individual mental model of the real world from their perceptions of that world. As they perceive each new experience, learners will continually update their own mental models to reflect the new information, and will, therefore, construct their own interpretation of reality.

This theory suggests that learners construct their own knowledge through their experiences and interactions with the environment. AI-based mobile applications could support this theory by providing learners with interactive and engaging language learning experiences that allow them to explore and experiment with the language in a safe and supportive environment.

I.8.4. The Sociocultural Theory

Learning is a social activity, in interaction with each other, rather than an abstract concept (Dewey, 1938). For example, Vygotsky (1978) believed that community plays a central role in the process of "making meaning." For Vygotsky, the environment in which children grow up will influence how they think and what they think about. Thus, all teaching

and learning is a matter of sharing and negotiating socially constituted knowledge. Vygotsky (1978) states cognitive development stems from social interactions from guided learning within the zone of proximal development as children and their partner's co-construct knowledge. Fox (2001, p. 30) argues (a) that although individuals have their own personal history of learning, nevertheless they can share in common knowledge, and (b) that although education is a social process, powerfully influenced by cultural factors, nevertheless cultures are made up of sub- cultures, even to the point of being composed of sub-cultures of one. Cultures and their knowledge-base are constantly in a process of change and the knowledge stored by individuals is not a rigid copy of some socially constructed template. In learning a culture, each child changes that culture.

This theory suggests that language learning occurs through social interactions and the cultural context in which the language is used. AI-based mobile applications could apply this theory by providing learners with opportunities to interact with native speakers of the language, and by incorporating cultural elements into the language learning experience.

I.9. Artificial Intelligence-based Mobile applications

AI plays a role in conveying various information and also helps in making the English learning process even more effective. The existence of various kinds of learning technology makes it easier for these learners to understand what has been explained by the teacher. Even students also have the ease of learning even without having to face the teachers directly. There are so many choices of language learning applications based on the technology of Artificial Intelligence (AI) which can be used by both English educators and students/learners. Some examples of AI technology that can be used in English language learning are as follow:

I.9.1. Google Translate

Google has created an enormous suite of tools for users, but after their original search engine, possibly the most important application is Google Translate which can be accessed on http.google.com/translate (Smallwood, 2015, p. 51). Text speech has even been replaced by a translator. Google Translate can translate into up to 50 different languages. The users can translate entire documents using Google Translate. Google Translate can pronounce words in the new language and provide definitions of the words. Google Translate also can translate websites into a variety of languages.

Concerning teaching and learning English, Google Translate as a translator is the main function, namely as an online translator. Students can use it to translate words/phrases/sentences/paragraphs. Google Translate can be used to check the spelling of words that arise due to typos. It is very useful when it comes to checking the English spelling. Google Translate can be used as a tool to learn foreign language word pronunciation. For students who want to learn English for free, especially how to pronounce words.

I.9.2. Text to speech (TTS)

Google Translate adds text to speech as an additional feature. The text to speech feature of Google Translate provides various languages to be spoken, from words that are translated from various languages such as English. The text to speech feature in Google Translate can read text with a less flat intonation and is smoother than the others.

A text to-Speech (TTS) system can be defined as a system that can convert text into speech automatically through phonetization (the arrangement of phonemes to form speech). A TTS system can pronounce any word because the vocabulary is unlimited.

Concerning teaching and learning English, Text-To-Speech (TTS), can convert computer-generated text into pronunciation (audio), where the resulting pronunciation can be adjusted for speed, intonation, and the output audio format to be saved in the form of an audio file.

TTS technology can streamline the teaching and learning process and complement the learning media for English subjects, especially in the English laboratory (Yudhistiro, 2016).

I.9.3. English Able

English ABLE is an Assessment-Based Learning Environment for English grammar. This technology was developed by Zapata-Rivera et al (2007). Assessment-based learning environments (ABLE) use assessment knowledge to direct instruction from a variety of sources (e.g. Formative and summative).

Concerning teaching and learning English, English ABLE refers to a learning environment that focused on tests to help English language learners learn about grammar in English. English ABLE uses a TOEFL CBT job library to build new sets with improved assignments aimed at unique English Language Learning component skills. An adaptive, scaffolded learning environment, also offers packages for learners to help students master facets of English grammar.

I.9.4. Orai

Orai's perfect option for public speaking. It can not only be used to support a teacher but can also be used as a teacher.

Concerning teaching and learning English, Orai's strengths are being able to detect how many words we say to detect how many fillers we say while we speak. Using Orai in class, the teachers can combine it with English speaking subject matter at that time, such as describing people, then give students about 15 minutes to use Orai and after that choose randomly to come forward to practice speaking immediately.

Orai provides several features designed to hone students' speaking skills, namely Lessons, Practice, Progress, and Recordings. Each of the main features has interesting content and can be studied repeatedly to hone these speaking skills. In the 'Lessons' feature, those who want to practice speaking can learn and practice their speaking skills on the content provided. Each content consists of three content stages that must be completed before you can learn the next lesson content. (Suryani et al., 2019).

I.9.5. Elsa

English Learning Speech Assistant (ELSA) developed and designed by Vu Van in 2015, and is based in San Francisco, United States. This application makes use of Artificial Intelligence (AI) and speech recognition to help improve and perfect English pronunciation. ELSA (English Learning Speech Assistant) Speak is an application for learning English that applies artificial intelligence and speech recognition. This technology allows for a two-way learning process, for example, the users can pronounce certain words or sentences, then the system will perform analysis and provide corrective input. The ELSA framework is trained to use voice data of people speaking English with multiple accents, to recognize the speech patterns of non-native speakers, distinguishing them from most other speech recognition technologies. Users are given an assessment test to determine their level of proficiency. ELSA provides scores ranging from zero to 100, with most native speakers scoring 95 or above. The results help ELSA personalize the user's learning path, highlighting which sounds hit the spot, and what else needs tweaking. ELSA makes suggestions for specific lessons according to the user's abilities.

Concerning teaching and learning English, Application ELSA (English Learning Speech Assistant) Speak is an application for learning English that applies artificial

intelligence and speech recognition to help students improve their English speaking skills. (Eka, 2020).

I.9.6. Chatbot

Chatbots as one of the artificially intelligent conversational systems are the latest technologies designed to communicate both with humans and computers automatically (Nghi et al., 2019). Several previous studies have proven the use of chatbots as a learning medium, especially learning English (Afrianto et al., 2019).

Concerning teaching and learning English, the Chatbot application that is built will act as an English conversation partner. Conversations, in general, can be carried out orally or in writing so that it should be possible for the user to be able to practice both. To support the purpose of the chatbot application as a medium for English conversation training, a grammar error correction feature and a user's daily log feature are needed. The responses obtained included the location of the errors, suggestions for replacing words/sentences, and descriptions of errors. This is an effort to minimize errors in the user's sentence structure. Then the daily log feature is useful for measuring the extent to which the user's practice progresses in conversation mastery and English sentence structure. That way, users not only familiarize themselves with conversational English, but also get corrections and assessments of their practice. (Haristiani, 2019)

I.9.7. Duolingo

Duolingo is the most popular mobile application for language learning both on App Store and Google Play. With over 300 million users and 94 languages available. Among these 300 million users, 30 million are active users, utilising the app on a regular basis. After a short period of a beta version in 2011, it was finally launched for the general public on June 19, 2012. Apart from the mobile applications, users can also use its web-based version which offers a similar user experience to the mobile apps.

I.9.8. Memrise

Memrise is a language learning company founded in 2005 in the UK. Its Android and ios applications were both launched on May 2013 and since then they have engaged more than 42 million students with their innovative, entertaining and user friendly platforms (Android, ios and web-based)

Users can download Memrise for free and can also start learning without any charges. Memrise offers freemium accounts that allow users to have an idea of what learning looks like before deciding to benefit from extended features offered to premium accounts that can be purchased from across the platforms.

Memrise gives the possibility to everyone to create their own courses by following a specific policy and community rules. This means that teachers can create collaborative environments and invite their students to attend their courses for further extracurricular activities and exercises.

During the learning process, AI is applied to track students' performance and adapt lessons based on their needs. As an example, when the user commits an error or a mistake, the AI system keeps on providing similar exercises and flashcards to the student with the same phrase, word or grammatical element until the student corrects their mistake and intuitively understands the theory behind that issue.

There are numerous types of exercises used to help students memorise words and phrases. The most used exercises are multiple choice ones where the program provides students with audio-visual content based on which they have to select the right answer. Moreover, sometimes the user has to write the words or phrases pronounced or to translate them from their native language to the target language. Errors and mistakes do not have immediate feedback, but they appear over and over again until the user performance improves, and they stop committing the same mistakes.

The most interesting and innovative feature of Memrise, though, is the use of brief videoclips, recorded in the countries where the language is natively spoken, showing native speakers pronouncing words and phrases in a natural way. This human and entertaining characteristic element of the application makes the platform more appealing since it reveals part of the culture of the countries and the values the target language carries.

I.10. The benefits of AI-based Mobile Applications for language learning

A number of researches and strategies have been conducted and devised to effectively apply artificial intelligence (AI) applications to teach/learn languages. The core points that have been covered are AI strategies and its suitable applications for teaching/learning languages, the effectiveness of these applications, their practical use, and the requirements

for using them in the fields of teaching/learning languages. This kind of applications have several benefits in enhancing language learning, including:

1. Personalized Learning: AI-based language learning apps can personalize the learning experience according to the learner's needs. The AI algorithms can analyze the user's learning patterns and provide them with customized learning materials, feedback, and activities.

2. Interactive Learning: AI-powered mobile apps can provide interactive learning experiences that engage the learner and make language learning more fun and engaging. For example, AI chatbots can simulate real-life conversations, and speech recognition technology can provide instant feedback on pronunciation.

3. Accessibility: AI-based language learning apps can be accessed anywhere and anytime, making it easy for learners to fit language learning into their busy schedules.

4. Cost-effective: AI-powered mobile apps are cost-effective compared to traditional language learning methods. Learners can access language learning materials at a lower cost, and they do not need to pay for expensive language courses.

5. Gamification: AI-based language learning apps can use gamification techniques to make the learning experience more engaging and fun. Gamification elements such as badges, points, and leaderboards can motivate learners to continue learning and achieve their language learning goals.

6. Continuous Learning: AI-powered mobile apps can provide continuous learning opportunities, allowing learners to practice their language skills regularly. The apps can send reminders, provide daily practice exercises, and track progress, ensuring that learners stay motivated and committed to their language learning journey.

Overall, AI-based mobile applications have the potential to significantly enhance language learning by providing personalized, interactive, accessible, cost-effective, gamified, and continuous learning experiences.

I.11. Conclusion

The development and popularization of artificial intelligence technology has not only brought many conveniences to human life, but also become one of the important contents of teaching reform in the education industry. In the process of modern English teaching and

learning, we should not only pay attention to the practice and application of AI in teaching, but also integrate AI and English teaching activities fully and interact effectively, optimize the effect and mode of English teaching, and promote the healthy development and reform of English education.

Chapter II

Methodology and data analysis

II. Methodology and Data Analysis

II.1. Introduction

In the first chapter, we have presented an overview of Artificial Intelligence, its history and its implementation in the field of education. In addition, a set of AI-based Mobile applications were introduced in order to illustrate its usage in the field of learning English as a foreign language.

In this chapter, we are going to spot the light on mainly the methodology used in conducting this research. First, we tackled the procedure of this research, the context, the participants and the different methods used in collecting data such as: questionnaire with students and an interview with teachers. At the end of this chapter, we have the analysis of the findings.

II.2. Procedure

The present research was carried out with university students, at the department of English at Abdelhamid Ibn Badis University of Mostaganem. This study was conducted to investigated the role of AI-based Mobile application in English Language learning, its importance and efficiency.

At the end of the second semester, an interview was done with teachers and a questionnaire was delivered to students.

II.3. Context of the study

The current study was conducted with second year master students of didactics of foreign languages at the department of English Abdelhamid Ibn Badis University of Mostaganem, during the academic year 2022-2023.

The study aims at investigating the role of AI in English language learning. We chose this particular setting because students at that level are expected to be responsible of their own learning.

II.4. Participants

The selected sample for this research paper is composed of thirty (30) students of didactics of foreign languages who study at Abdelhamid Ibn Badiss university of Mostaganem. The sample was chosen intentionally because at that level students are expected to be eligible to use Artificial Intelligence Applications to learn English. In addition to three (03) teachers who teach at the same university.

II.5. Data collection instruments

For this study, we used different data gathering tools which include: students' **questionnaire** and i**nterview** with teachers.

II.5.1. Questionnaire

In conducting research, the researcher needs to use different tools to collect data from the chosen participants. One of these tools is the use of the questionnaire. A questionnaire can be defined as series of questions used in order to collect data and information from the sample being selected as Saul Mctead (2018) claimed "a questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents".

To investigate the role of the role of Artificial Intelligence usage in language learning, thirty copies of the questionnaire were sent to second year master students of didactics of foreign languages at the end of the second semester via Facebook due to time conditions and the efficiency of this kind of online forms.

II.5.1.1. Description of the questionnaire

The questionnaire consists of both qualitative and quantitative questions: close-ended and open-ended questions. The close-ended questions were selected for the purpose of getting the exact answers from respondents ,which took the form of yes/no questions or giving a set of suggestions and ask them to cross (X) the appropriate answer ,while open-ended questions were used to get further and more explanations. Our questionnaire is divided into two sections and each section consists of a number of questions (see appendix 1).
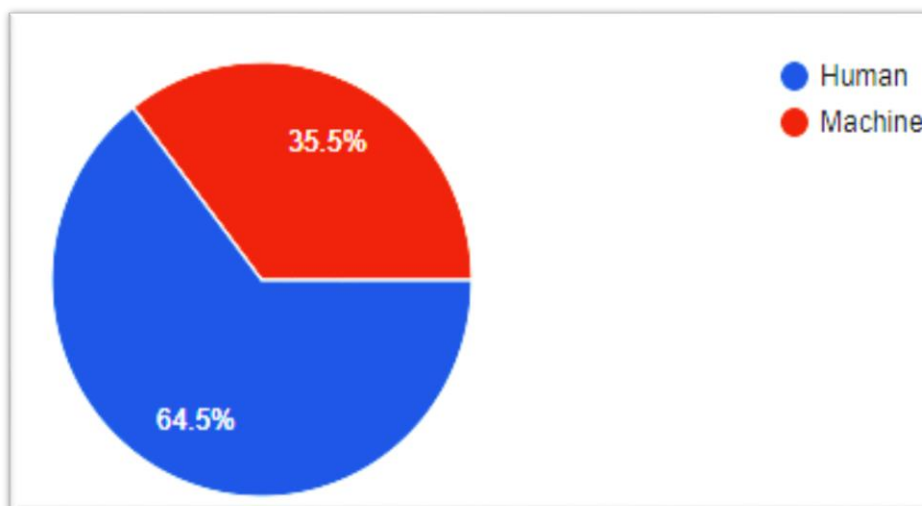
Section one: learners' preferences (Q1_Q9)

In this section, the students are asked several questions concerning their usage of Artificial Intelligence in learning English. The questions are likely close-ended and open-ended questions where students are asked to cross the suitable answer and provide further opinions.

Section two: AI Applications efficiency (Q10_Q15)

This section aimed at knowing Artificial Intelligence based Mobile Applications efficiency and helpfulness in learning English as a foreign language. In furtherance to this, in this section, questions aim at knowing students' satisfaction about this kind of Mobile Applications. The questions are close-ended where students are asked to cross the suitable answer.

# Question 01: learners' preferences

This question aims at knowing the preferable medium by students to learn English. The graph shows that **64.5%** prefer human as a medium to learn the language.

II. Graph 1: Learners' preferences

Question 02: students' usage of the AI based Mobile Applications

This question seeks to know how often the students use Artificial Intelligence application to learn English. The graph below shows that **46.7 %** of the students sometimes use them, while **26.7%** often use them. However, **10%** of the sample said that they rarely use them. On the other hand, another **10%** of the sample always uses these apps.
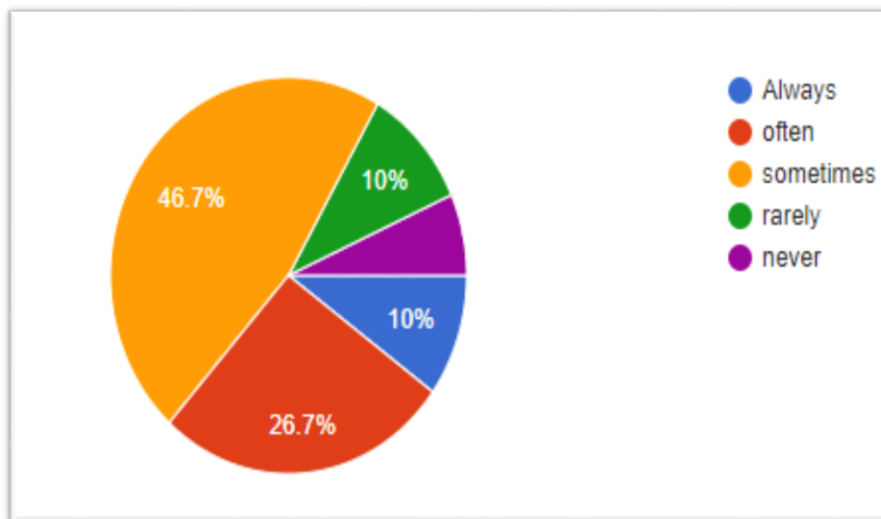
II.Graph 2: students' usage of the AI- based Mobile applications

Question 03: learners' purposes behind using AI-based Mobile Applications

This question targets the purpose behind using AI Applications by students to learn English. According to the results shown below, **44.4%** of the students use AI Applications for translation while **27.8%** use it for writing. However, **11.1%** of the sample use these applications for speaking reasons, **8.3%** for listening and reading.
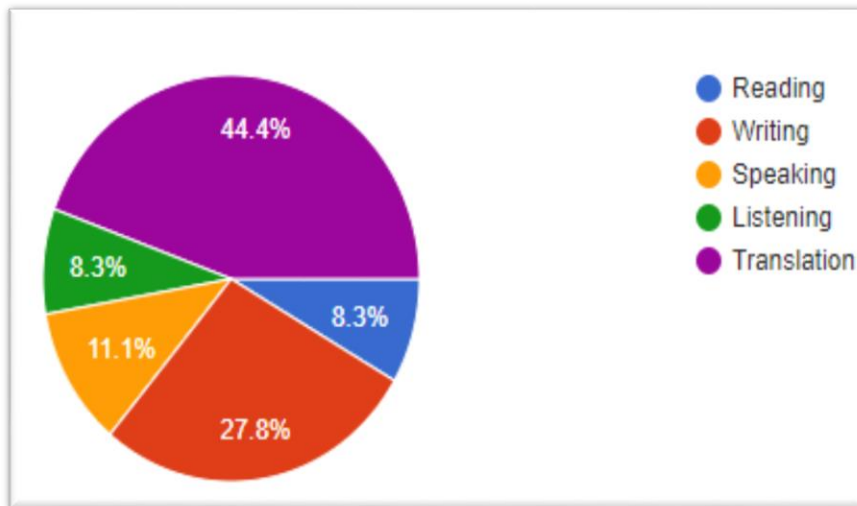
II. Graph 3: learners' purposes behind using AI-based Mobile Applications

Question 04: learners' preferences after using AI based Mobile applications

This question enquires at knowing students' preferences after their experience using AI Applications. The graph below shows that **72.7%** prefer the modern method of learning English while **27.7%** still prefer the traditional method.
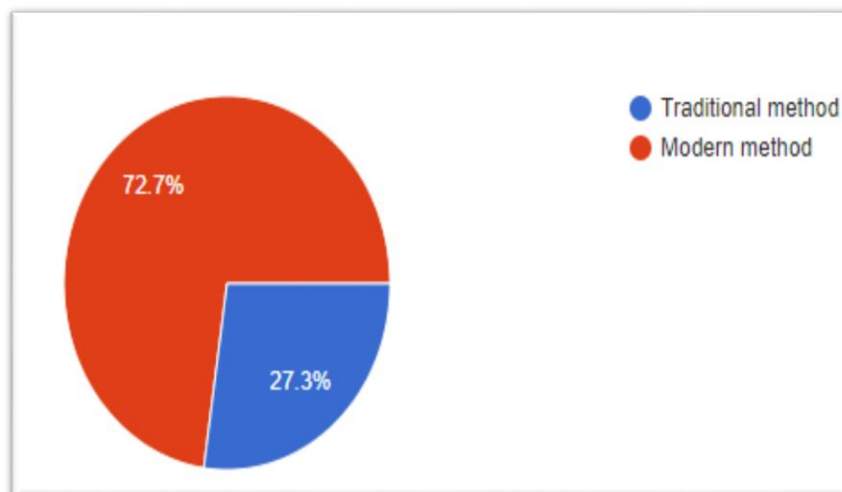
II.Graph 4 : learners' preferences after using AI Applications

Question 05: students' opinion about AI based Mobile Applications

The present question seeks to explore the efficiency of the applications used by students to learn English. The meanwhile results shown in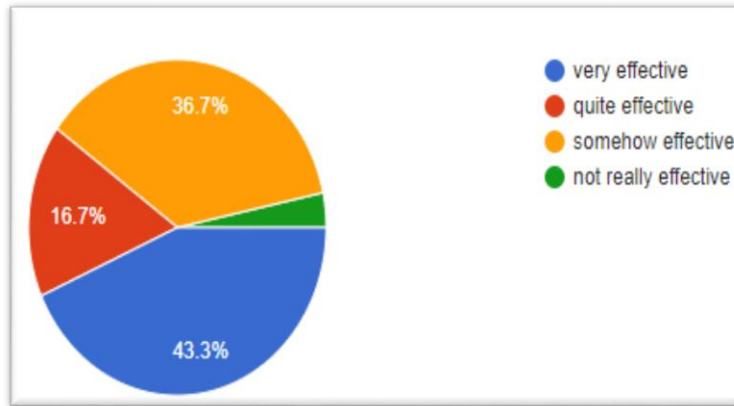 the graph below highlight that **43.3%** find these applications very effective, while **36.7%** said that it is quite effective and **16.7%** said that it's somehow effective.

II.Graph 5 : students' opinion about AI applications efficiency

Question 06: students' opinion about AI based Mobile Applications helpfulness

This question seeks to discover whether AI Applications are helpful or not. **50%** of the students argued that it is very helpful, **40%** claimed that it is somehow helpful, while **6.7%** argued that it is quite helpful and **3.3%** mentioned that it is not really helpful.
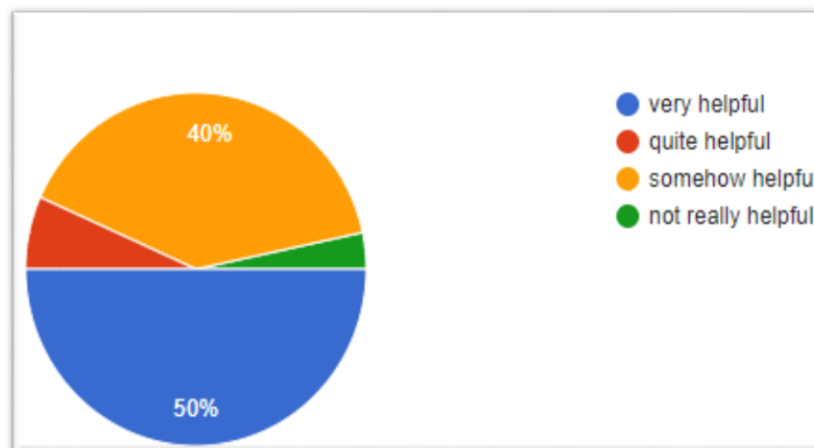
II.Graph 6: students' opinion about AI Applications helpfulness

Question 07: students' level after using AI-based Mobile Applications

The aim behind asking this question is to know students' level after their usage of AI Applications. As the following graph shows that **43.3%** of the students argued that their level is quite better while **36.7%** of them rate their level as better. However**, 20%** of the sample were neutral.
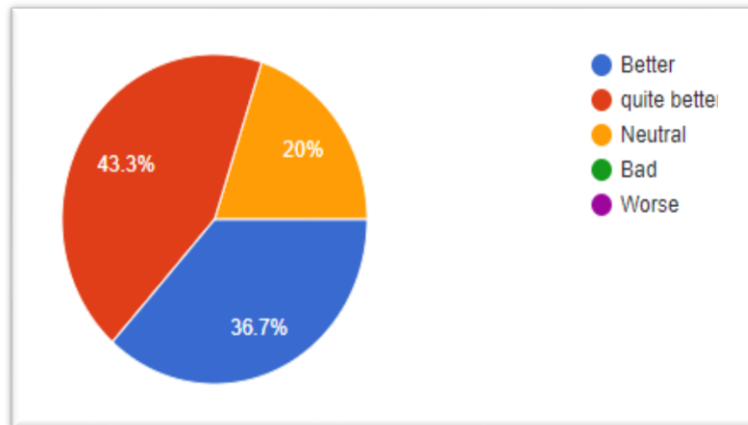
II.Graph 7: students' level after using AI Applications.

Question 08: the skills improved after the usage of AI Applications

This question inquires to know the skills improved after the usage of AI Applications. The graph below represents that **26.7%** claimed their capacities in translation and writing have been improved, while **23.3%** improved their speaking and **10%** improved their reading and speaking**.**
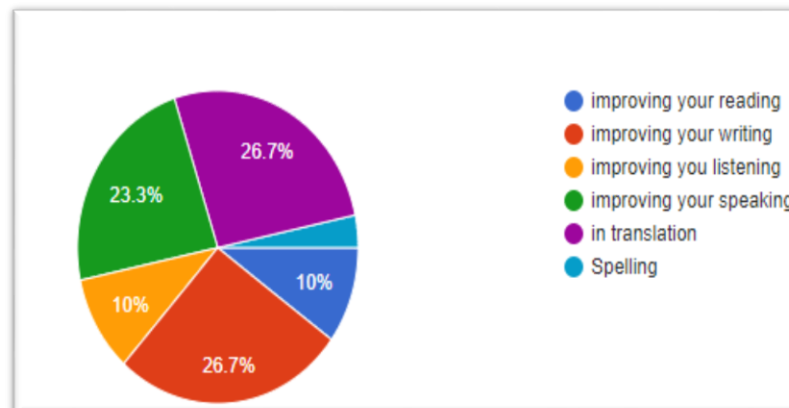
II.Graph 8: the skills improved after the usage of AI Applications

Question 9: students' opinion about AI application usefulness

This question inquires to know students opinion about AI Applications usefulness. The results below shows that **56.7%** said that they are very beneficial, **26.7%** quite beneficial, **13.3%** somehow beneficial and **3.3%** declared that AI Applications are not really beneficial.
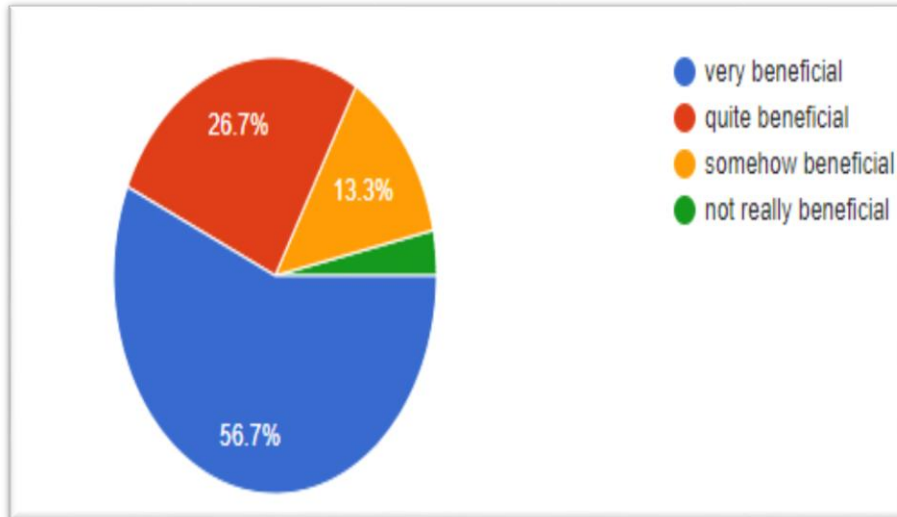
II.Graph 9: students' opinion about AI Applications usefulness

Question 10: students' satisfaction about AI applications usage

The main aim behind asking this question is to know students' satisfaction about using AI Application to learn English. **41.9%** were satisfied, **32.3%** highly satisfied, **19.4%** neutral and **6.4%** were dissatisfied.
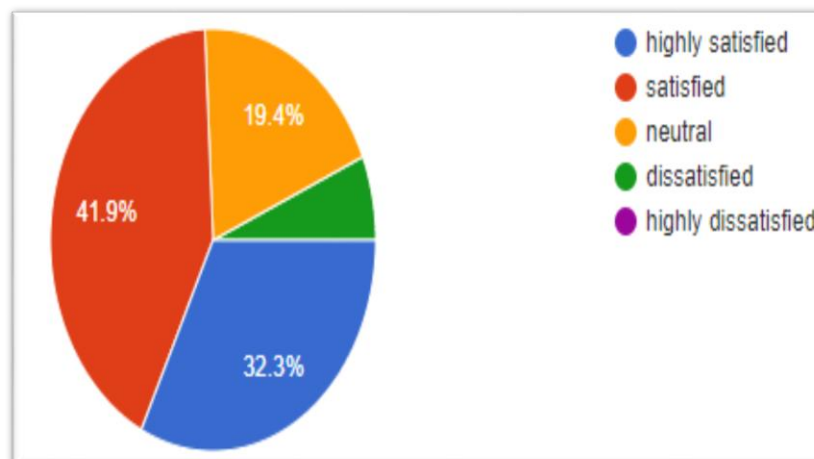
II.Graph 10: students' satisfaction about AI applications usage to learn English.

II.5.2. Interview:

The second method used to collect more data in this research is an interview with teachers. The designed interview was done online with Three (03) teachers of English at the department of English at Abdelhamid IbnBadis University because of the difficulties of meeting teachers. Meanwhile, interview contains nine questions, it was done for the sake of collecting more information about the subject from the point of view of teachers.

The interview consists of open-ended questions. It deals mainly with teachers' perceptions and point of view about the usage of AI-based mobile applications by students to learn English and improving their language proficiency. (see Appendix 2).

II.5.2.1. Description of the interview:

The results of the interview were as follow:

Question 01: teachers' experience in teaching English as a foreign language

This question seeks to know how long have the teacher been teaching English as a foreign language.

Teacher A: eight (08) years ago

Teacher B: (10) ten years ago

Teacher C: (05) five good years

Question02: teachers' opinion about the use of AI- Based Mobile Applications

This question aims to know teachers' opinion about the use of AI-based Mobile application as an educational tool to learn English by students.

Teacher A: for me, it is very beneficial especially in terms of accuracy and efficiency.

Teacher B: the usefulness of AI-based Mobile Applications depends on how they are created and integrated into a full language-learning plan

Teacher C: the AI-based mobile applications, in my opinion, are very useful and effective.

Question 03: teachers' point of view about the importance of AI-based Mobile Applications

The purpose behind asking this question is to know teacher's opinion about the importance of AI-based mobile applications in learning English.

Teacher A: they are very important

Teacher B: by offering accessible, adapted and engaging experiences, AI-based Mobile applications can enhance English Language acquisition in important ways. However, their significance should be understood in the context of a well-rounded approach to language learning that includes a variety of teaching techniques.

Teacher C: yes, they are very important

Question 04: the efficiency of AI-Based Mobile Applications, in a point of view of teachers

This question seeks to know the efficiency of AI-Based Mobile application, according to teachers.

Teacher A: yes, it is

Teacher B: it is crucial to incorporate AI-based Mobile applications into a whole language learning plan that includes a variety of resources, practice opportunities and engagement with the language in authentic scenarios in order to optimize the benefits of these applications.

Teacher C: yes, it is

Question 05: teachers' opinion about their students' language mastery

This question inquires to know, in a point of view of teachers, whether their students' language mastery has improved or not.

Teacher A: yes, it does

Teacher B: yes, it does

Teacher C: yes, it does

Question 06: the impact of AI-based mobile applications usage on students language use

This questions aims at knowing, in a point of view of the teachers, how the use of this kind of applications affects students' language use.

Teacher A: they improved in terms of vocabulary, grammar and even pronunciation

Teacher B: by improving their speaking and writing skills

Teacher C: better understanding of the language and acquiring more vocabulary

Question 07: teachers' ratability of AI-based Mobile applications

The present question aims at knowing teachers' opinion about this kind of Applications and how would they rate it.

Teacher A: they are beneficial

Teacher B: they are effective and helpful

Teacher C: useful and entertaining

Question 08: teachers' opinion about the use of this kind of applications to reach specific goals

This question aims at knowing teachers' opinion about the efficiency and the helpfulness of AI-based mobile applications to reach students' learning goals and to fit their learning styles, knowing that they mainly use this kind of applications to improve their level in writing, reading, listening, speaking and translation.

Teacher A: absolutely, it is

Teacher B: it depends on the learning goals

Teacher C: it is when properly used

Question 09: teachers' recommendation of this kind of applications

This question aims to know whether the teachers do recommend the use of this kind of technology to learn English or not.

Teacher A: yes, I strongly do recommend the use of these applications by both students and teachers since it helps the learners improve their language proficiency

Teacher B: yes, I do. By providing students with reliable materials and a variety of application methods, AI Mobile Applications may considerably enhance English Language Learning, but still related to their learning goal and teaching plan.

Teacher C: absolutely, I do. In order to reach the learning goals, students have to rely on other extra materials that help them improve their language mastery.

II.6. Conclusion:

This chapter attempts to cover the methodology used in conducting this research where the main important points where covered such as: the context where the study took place, the respondents who were concerned and the data collection instruments which took the form of a questionnaire for the students and an interview with teachers.

The chapter, then, provided a description of the context in which the study is conducted, and information on the population sampling and size are stated and justified. Next, the chapter offered a description and explanation of the method of enquiry selected as well as the data collection tools employed. Finally, the analysis of the data were advanced together with their presentation in charts for more precision and clarification.

Chapter III

Data discussion and Findings

III.Data discussion and findings

III.1. Introduction:

The current chapter presents a further examination and analyses of the data gathered in the second chapter. A mixed-method research was conducted in order to investigate the role of Artificial Intelligence based Mobile Applications to learn English as a foreign language, a questionnaire was administrated to students and an interview was conducted with teachers.

In the same line of thoughts, this chapter attempts to interpret the results gathered from the data collection tools, and discuss the major findings from the questionnaire and the interview. Furthermore, recommendations will be presented by the end of this Chapter.

III.2. Discussion of students' questionnaire:

Question One: learners' preferences

This question aims at knowing the preferable medium for students. Twenty (20) out of thirty (30) students, prefer human as a medium to learn English. According to them, human interaction is very important since it includes facial expressions and voice tone. In addition, human interaction improves communicative skills through interaction. However, ten (10) out of thirty (30), prefer to learn English using a machine because, according to them, it is useful, efficient, effective and easier to study alone.

Question two: students' usage of AI-Based Mobile Application

This question seeks to know how often the students use AI Applications to learn English. Fourteen (14) out of thirty (30) students do, sometimes, use AI Applications to learn English. Eight (08) of the sample, often, and three (03) out of thirty (30), always use these kind of Applications and three (03) of them rarely do. However, two (02) students argued that they never used AI Applications to learn English. According to the collected data, the majority of the sample uses the AI Applications to learn English.

Question three: learners' purpose behind using AI-Based Mobile applications

This question targets to know the purpose behind using AI Applications by students to learn English. Sixteen (16) out of thirty (30) students use AI Applications for translation while ten (10) of them use it for Writing. Three (03) use it for writing and Listening. On the

other hand, four (04) students use the AI Application for speaking purposes. In reference to the exposed results, the majority of the students use AI Applications to improve their Productive Skills (translation, writing and speaking).

In addition to this question, an open-ended question was given in order to provide other skills that students aim to develop. The answer was that they do use AI Application for research.

Question four: learners' preferences after using AI-Based Mobile applications

This question aims at knowing students preferences after their experience using AI Applications. The results proved that twenty-four (24) out of thirty (30) students prefer the modern method to learn English while only six (06) still prefer the traditional method.

The reasons behind these preferences is that, according to the students, the AI Applications are faster, more efficient, helpful, practical and providing more time for learning.

Question five: students' opinion about AI-Based Mobile application efficiency

The present question seeks to explore the efficiency of the Applications used. Thirteen (13) out of thirty (30) argued that these kind of applications is very effective while eleven (11) claimed that it is quite effective. However, five (5) students said that it is somehow effective. In contrast, only one (1) student argued that it is not effective.

Question six: students' opinion about AI-Based Mobile application helpfulness

This question seeks to discover whether AI applications are helpful or not. Half of the sample (50%) said that it is very helpful, while twelve (12) argued that it is somehow helpful, two (2) mentioned that it is quite helpful and only one (1) said that these kind of application is not really helpful. With regard to the results above, most of the students find these applications helpful which means they use it to improve their level in English and they realise their learning aims.

Question seven: students' level after using AI-Based mobile appliactions

The purpose behind asking this question is to know students' level after their usage of AI Applications. Thirteen (13) out of thirty (30) students argued that their level, after using this kind of applications, was quite better and eleven (11) said that it is better while six (6)

were neutral. According to the collected data, the majority of the students could improve their level in English due to the efficiency of AI Applications. This last, confirms the results of the two previous questions.

Question eight: the skills improved after the usage of AI-Based Mobile applications

This question inquires to know the skills improved after the usage of AI Applications. Eight (8) students argued that their writing skills and translation have improved. In addition, seven (7) students claimed that their speaking skills have progressed while the same percentage (10%) of three (3) students said that their level in reading and listening have improved. Overall, according to the collected data, the most improved skills are the productive skills (writing and speaking) with a percentage of 50%. However, only 20% of the research sample has improved their receptive skills (reading and listening).

Question nine: students' opinion about AI-Based Mobile applications usefulness

This question aims to know students' opinion about AI Applications whether it is beneficial or not. Seventeen (17) students argued that these applications are very beneficial, eight (8) of them mentioned that it is quite beneficial, four (4) of the research sample said that it is somehow beneficial, while only one (1) students said that it is not really beneficial.

Question ten: students' satisfaction about AI-based mobile application usage

The main aim behind asking this question is to measure students' satisfaction about using AI Applications to learn English. Thirteen (13) students from the research sample argued that they are satisfied, ten (10) said that they are highly satisfied, five (5) mentioned that they are neutral, while only two (2) of the research sample argued that they are dissatisfied.

III.3. Findings from students' questionnaire:

The current study was conducted to investigate the role of AI-based mobile applications in English language proficiency. In addition, it aims at knowing students' usage of these applications and their satisfaction about its efficiency.

To start, the first question shows that the participants of the questionnaire, before their usage of AI-based mobile applications, preferred the traditional method of learning English, which refers to the traditional learning environment that takes place in a classroom using the

traditional method and approaches of teaching and learning. To emphasize, they mentioned that human interaction is very important since it is based on voice tone and facial expressions, in addition to developing real life situations and conversations.

However, the fourth question confirms that students who participated in the questionnaire, after their experience using AI-based mobile applications, switched to preferring the modern method of learning English. According to the participants, it is faster, efficient, easier and practical. Meaning that, it simplifies the information using mind mapping. Therefore, it helps gaining time since one can learn English while taking breakfast or transportation.

The results found in this research emphasize that AI-based mobile applications plays a significant role in learning English as a foreign language. To illustrate, according to the second and the third question, the majority of the participants from the questionnaire use AI-based mobile applications for translation and writing. That is to say, they use this kindn of application to improve their productive skills and language proficiency.

However, the fourth question confirms that students who participated in the questionnaire, after their experience using AI-based mobile applications, switched to preferring the modern method of learning English.

According to the collected data from the questionnaire, the first hypothesis is clearly confirmed, which means that the participants do prefer AI-based mobile applications to learn English.

Additionally, based on the results collected from the sixth question, the participants argued that AI-based mobile applications are helpful, this confirms the second hypothesis which suggests that this kind of applications help students to learn English and improve their language proficiency. To demonstrate, among the skills improved by AI-based mobile applications are the productive skills (writing and speaking), in addition to translation.

In furtherance to this, according to the collected data from this study, the participants find that AI-based mobile applications are beneficial since they could improve their language proficiency.

In addition, according to the results revealed from the last questions, the participants are satisfied about these mobile applications efficiency. This result confirms the third hypothesis, which argued the effectiveness of this kind of applications.

III.4. Discussion of teachers' interview:

Question 01:

The main aim behind asking this question is to determine teachers' experience in English Language Teaching because more the teacher is experienced the more he is capable of mastering methods of teaching. In addition, s/he can provide a creative and extracurricular teaching and learning methods and materials.

Question 02:

By asking this question, we wanted to know teachers' point of view about AI-Based Mobile Applications as an educational tool to learn English. The results proved that teachers' opinion about this kind of applications is favourable. They argued that these applications are beneficial, useful and effective. However, some of the teachers claimed that the usefulness of AI-Based Mobile applications depends on the manner they are created and integrated in a language learning program.

Question 03:

This question inquires about teachers' opinion regarding the importance of AI-Based Mobile Applications. Most of the teachers argued that they are very important. However, some teachers related its importance to its accessibility, adaptability and its potential to provide engaging experiences. In addition to that, teachers argued that this kind of applications should be understood in the context of a well-rounded approach to language learning that includes a variety of teaching techniques.

Question 04:

As a result to this question, the majority of the teachers supported the efficiency of these applications in improving students language proficiency. They emphasize the incorporation of this kind of applications into a whole language learning plan that includes a variety of resources in order to optimize the benefits of these applications.

Question 05 and 06:

This question is directed in order to identify teachers' evaluation of the improvement of their students' level. All the teachers agreed that their students' level has improved after their usage of AI-Based Mobile Applications. They added that they improved in terms of vocabulary, grammar and pronunciation. In addition to the speaking and writing skills. In

furtherance to this, students after their usage of these applications, they could better understand the language.

Question 07:

Generally, all the teachers agreed that AI-Based Mobile Applications are beneficial, effective, helpful, useful and entertaining at the same time.

Question 08:

By asking this question, we wanted to know if this kind of applications fits students' learning goals and styles. Almost all the teachers asserted that the AI-Based Applications are efficient and helpful for students in order to reach their learning aims and fit their learning styles.

Question 09:

This question was asked to know if the teachers do recommend the use of this kind of applications in order to learn English. Generally, all the teachers supported the use of this applications as an educational material to improve students' language proficiency.

III.5. Findings form teachers' interview:

The current study was conducted to investigate the role of AI-based mobile applications in English language proficiency. In addition, it aims at knowing teachers' opinion about the usage of these applications and their satisfaction about its efficiency.

The results of the interview reveal that this kind of applications have several benefits in enhancing language learning:

- Artificial Intelligence Mobile Applications are beneficial, useful and effective in terms of accuracy and efficiency;
- This kind of technology offers accessible, adapted and engaging experiences which could enhance language learning;
- It is crucial to incorporate AI-Based Mobile Applications into a language learning plan;
- It helps in engaging and involving students into the leaning context;
- This kind of applications plays a major role in improving students' language use.

The findings mentioned above confirms the hypothesis suggested in the beginning of this research which argue that, first, AI- based mobile applications help learners in improving their language proficiency, second, the Applications' learners use are effective while learning English.

III.6. Research recommendation:

The development and popularization of artificial intelligence technology has not only brought many conveniences to human life, but also become one of the important contents of teaching reform in the education industry.

In the process of modern English teaching and learning, we should not only pay attention to the practice and application of AI in teaching, but also integrate AI and English teaching activities fully and interact effectively, optimize the effect and mode of English teaching, and promote the healthy development and reform of English education.

- Create Assessment-based learning environment;
- Rely on AI-based Mobile Applications to improve students language proficiency;
- Teachers can create collaborative environment and invite students to attend their courses for further extracurricular activities and exercises;
- Encourage students to collaborate with Mobile Applications Developers to create a Mobile Application that fits their learning needs and styles and targets a specific learning objective.

III.7. Conclusion:

In conclusion, the main goal of this chapter was to analyse, present and discuss the data acquired from the students' questionnaire and teachers' interview. To recap, the questionnaire was administrated to Master two students of Didactics of foreign languages at the English Department of University of Mostaganem. The purpose of the questionnaire was to highlight the effectiveness of AI-based mobile applications in English Language learning.

Moreover, the second goal of the questionnaire was to elicit students' attitudes towards this kind of applications, whereas the purpose of the teachers' interview was to obtain a deeper understanding and opinion of AI-based mobile applications for academic purposes.

General Conclusion

General conclusion

Teaching and learning English has become easier with the development of technology and digital platforms. AI has found its way into language teaching and learning. It refers to the science of having a machine to thinks and behave like a human being who is intelligent. It is a series of advanced technologies that allow humans to feel, comprehend, function and learn from machine.

In the new era, AI technology has made an important breakthrough in the field of Education. The use of AI technology in Education will make learning more individual, provide effective learning experiences, enable students to discover their talents, improve their creativity and reduce teachers' workload.

This research thesis is to know the role of Artificial Intelligence (AI) and to investigate AI technologies in English Language Learning. The aim of this study is to investigate the effectiveness of AI-based mobile applications in enhancing English language proficiency and what purpose are used for (reading, writing, listening, speaking, translation)

The first chapter covered the literature about AI definition, its history, its use in today's world. On the other hand, we spot the light on AI applications in Education in general and in English Language teaching in specific. We have provided also different language learning theories and its relation with AI-based Mobile Applications. To illustrate, a set of AI-based mobile applications were introduced for further clarity.

As far as the methodology is concerned, the second chapter targets the practical side of this research. It starts first with procedure of the thesis, the context where the research took place, the participants who were concerned and the data collection methods including questionnaire with students and interview with teachers; in addition to that, the analysis of both the findings of the questionnaire and the interview.

The third chapter targets the interpretations and discussion of the findings of the main important and interesting answers gathered from both the questionnaire and the interview. This chapter covers also a general discussion of both the questionnaire and the interview. Furthermore, at the end of the chapter we propose some recommendations for further improvements and success.

As a result of this research, Artificial intelligence (AI) has revolutionized the way we learn and interact with languages, including learning English. AI-based mobile applications

for learning English offer personalized and interactive learning experiences that are tailored to the individual's needs and learning style. These applications use natural language processing and machine learning algorithms to analyze the user's language skills and provide customized feedback and recommendations.

Some common features of AI-based English learning mobile applications include speech recognition, interactive chatbots, language translation, vocabulary building, grammar checking, and personalized learning plans. These features help users to improve their English skills in a fun and engaging way, and at their own pace.

AI-based mobile applications for learning English are designed for all levels of language learners, from beginners to advanced learners. They cater to a wide range of learning styles and preferences, including visual, auditory, and kinesthetic learners. These applications can be accessed on mobile devices and are available anytime and anywhere, which makes them convenient for busy learners who want to learn on the go.

Finally, the development of AI systems that can process and generate language has also led to new insights into how humans learn language. By comparing the performance of AI systems with human language learners, researchers have been able to identify similarities and differences in the ways that machines and humans acquire and use language.

Overall, AI-based mobile apps can provide learners with personalized, interactive, and adaptive language learning experiences that are informed by current theories of language learning. These apps can help learners overcome some of the challenges associated with traditional language learning methods, such as lack of motivation, limited access to language resources, and difficulty in finding language partners

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4. ChatGPT

Appendices

Students' Questionnaire :

Dear students, you are kindly requested to answer this questionnaire as an attempt to investigate the role of Artificial Intelligence Mobile Applications in learning English. .The study does not include any personal information and the participants' identities will be kept confidential. Your answers are deeply appreciated.

Thank you!

1. How long have you been learning/ studying English?

………………………………………………

Learners' Preferences:

2. What medium do you prefer in learning English?
    o Human
    o Machine

3. Why?

…………………………………………………………………………………………

…………………………………………………………………………………………

……

4. Do you use Artificial Intelligence applications to learn English, such us: Duolingo, Google Translate, Elsa...?
    o Yes
    o No

5. Cite some of them?

…………………………………………………………………………………………

….

6. For which purpose?
    o Reading
    o writing
    o speaking
    o Listening
    o translation

7. **How long have you been using Artificial Intelligence application** to learn English?

…………………………………………………………….............................
...

8. **After your experience using Artificial Intelligence Applications**, do you prefer Traditional or Modern method of Learning?

    o Traditional method

    o modern method

9. Why?

    …………………………………………………………………………………

    How often do you use AI Applications to learn English?

    o Often

    o Sometimes

    o Rarely

    o Never

Artificial Intelligence Application efficiency:

10. According to you, is the Application you are using effective while learning English?

    o Yes

    o No

11. Does it helped you improve your language proficiency?

    o Yes

    o No

12. How?

    …………………………………………………………………………………
    …………………………………………………………………………………
    ……..

13. After the use of the Application, How would you rate your English Level?

    o Better

    o Good

    o Neutral

    o Bad

    o Worst

14. Do you think Artificial Intelligence Applications are beneficial to learn English?

    o Yes

    o No

15. Are you satisfied with your experience using AI Applications to learn English?

- o   Highly dissatisfied
- o   Dissatisfied
- o   Neutral
- o   Satisfied
- o   Highly satisfied

Teacher's interview

Dear teachers, you are kindly invited to answer this interview in order to have a concrete results concerning our research. It would be very grateful if you accept to answer the following questions about the role of Artificial Intelligence Mobile Applications in learning English as a foreign language. Your contribution will be of a great help to the present enquiry.

Thank you!

1. How long have you been teaching English as a foreign language?
2. What do you think of the use of Artificial Intelligence Mobile Applications as an educational tool to learn English?
3. In your opinion, how much important is the use of Artificial Intelligence mobile applications in learning English?
4. Do you think that the use of Artificial Intelligence Mobile Applications is effective and beneficial for learners to learn English?
5. According to you, is there any significant improvement in your students' language mastery after the use of this kind of applications?
6. How does it impact language use and what are the main results?
7. How would you rate this kind of applications?
8. Learners are using these applications mainly for improving their level in writing, reading, listening, speaking and translation. In your opinion, is it helpful and efficient to reach their learning goals and aims?
9. Do you recommend the use of such technologies in enhancing language skills? Why (not)?